City of Cambridge.

352
C17

THE

MAYOR'S ADDRESS

AT THE

Organization of the City Government,

JANUARY 3, 1887,

AND

THE ANNUAL REPORTS

MADE TO THE CITY COUNCIL,

FOR THE YEAR 1886.

CAMBRIDGE:
H. E. LOMBARD, BOOK AND JOB PRINTER,
636 MAIN STREET.
1887.

Published by Order of the City Council.

ADDRESS

OF

HON. WILLIAM E. RUSSELL,

MAYOR.

Gentlemen of the City Council:—

A wise custom provides that, as we assume the duties of our respective offices, we shall take a comprehensive glance at the whole work before us, that each particular need may be considered with reference to all other needs, and with knowledge of what has been done, and of the ways and means to meet what is yet undone. Necessarily we mingle somewhat the past with the present, and from them forecast the future.

Following this custom, it becomes my pleasant duty to go back with you over the past year on ground familiar to many of you; and then to step forth with you into this new year with hope, courage and enthusiasm, to meet the new duties and the new responsibilities. It is well as we review the old work, and face the new, to formulate, if possible, some principles or policy that, tested by experience, shall guide us.

A wise financial policy is the first necessity of good municipal government, and the mainspring of all its work. Such a policy, I believe, requires a careful,

thorough estimate of all current expenses for the year; the raising, by revenue and taxation, of an income sufficient to cover such expenses; and the careful, honest use of every dollar so spent. It does not require an economy that would neglect necessary work or much desired improvements; but if the work is done or the improvement made, that it shall be paid for out of the year's income, and not have the burden hidden in a debt. The people have a right to know and feel the expenses we incur. Such knowledge encourages care and responsibility in us, and gives to them an adequate check. It means that the tax-rate shall indicate and cover all current expenses. Great public improvements, such as a new bridge to Boston, a metropolitan system of drainage, a large trunk sewer, which are an expense, not of one year, but of many, and incurred for the benefit of many, cannot properly or possibly be paid out of the yearly income, but must be by debt, whose burden is borne by the years that receive the benefit.

The policy suggested has been the policy of the past two years. This year ends, as the past year ended, with all bills paid, a large unexpended balance of appropriations, a further reduction in the tax-rate, and a handsome surplus in the treasury. After payment of the year's expenses, including bills for more than $4,000 for work done within the financial year, but not payable till after its close; and deduction of unexpended balances, where the work planned is not finished, there remained a balance in the treasury of $54,349.83. Of this balance the city council wisely voted to take $5,250 to restore a trust fund, received prior to Dec. 1, 1883, for the perpet-

ual care of lots in the cemetery—leaving a net surplus of $49,099.83. The only debt created during the year, outside of water debt, was a funded debt of $25,000, for the construction of a main trunk sewer to the Belmont District. Of this there was spent $8,430.94, and the balance remains to complete the work.

I strongly recommend that we continue this financial policy the coming year. It is now established; it is well known and approved by our citizens; I believe it to be wise, prudent and honest.

No doubt this year severe and unusual burdens face us with a revenue much reduced. Besides the usual expenses, there is a demand for extensive electric lighting of the streets, for a large extension of the paving of Main street, for the building of two school-houses, for another fire engine, house and company, and for the introduction of the police signal system. At the same time we lose the revenue heretofore received from liquor licenses, amounting to some $35,000 or about sixty cents of the tax-rate. These various demands will all receive your careful consideration. I mention them now only to say that, if in your judgment we take the responsibility of incurring the expense—and to me it seems almost a necessity—we should also bear the burden of its payment, and not hand down to our successors our work for them to pay for. The future will have burdens enough of its own, without adding what the present should bear. Improvements are not so important as the payment of our debts. An honest rather than a low tax rate is an absolute necessity.

If we fairly and fully satisfy the wants of the new

year without debt, it seems impossible to expect any further reduction of the tax-rate. I sincerely hope it need not be raised. While I believe and have always urged that every effort should be made to lessen the burden of the taxes, as the first and most important step for the prosperity of the city, it is also true that necessary work must not be neglected. Cambridge must not stand still. The growing wants of this growing city are many; to them all I invite your attention, confident that your action will result only in her prosperity and progress.

LIQUOR LAW.

Before examining in detail the finances and departments of the city, I would call your attention to another policy, not a subject for our discretion, but prescribed for us by law, by the will of a majority of our citizens. For the first time this city has voted that licenses for the sale of intoxicating liquors shall not be granted. I am not responsible for this policy, I am for its enforcement. Men may differ as to the wisdom of the law, but honest men do not differ as to its honest, thorough enforcement. It shall be my earnest endeavor faithfully to discharge this new responsibility by every means within my power. In my opinion the law can be and should be enforced by the officers of the city upon whom the duty rests. Their honesty and efficiency will be on trial and closely scrutinized. All must be held to strict account, and any, who neglect or evade or shirk their duty, should be held unworthy of their office. I confidently rely upon you to cooperate with me in assisting and sustaining the police in

a thorough enforcement of this law. No doubt its enforcement will meet difficulties, evasions and violations, which should make us but the more vigilant and active. I anticipate one difficulty will be the proper prosecution of cases in court. It is but just to the police that they should have experienced counsel to assist them in such prosecutions. It is not customary nor hardly possible for the City Solicitor to do this work. I therefore recommend that an appropriation of $1000 be made for the purpose of employing counsel.

To the Committee on Police are largely given the control and discipline of the police force, and power of a judicial and executive character. Upon it falls much of the responsibility for the enforcement of this law. That responsibility should be assumed by those, who not only favor the enforcement of the law,—every one of us does that,—but who favor the law itself. With this in view I shall appoint the committee, departing from the selection that custom and my own wish would otherwise prescribe.

CAMBRIDGE RAILROAD COMPANY.

To one other general matter it is my duty to direct your attention. Cambridge, it is well known, is greatly dependent upon the horse railroad, not only for the convenience and comfort of her citizens, but for her own prosperity and development. Her one great disadvantage is lack of cheap and rapid transit. For years our citizens have hoped that this want would be supplied, but as yet there is no immediate prospect that their hope will be realized. For the past few years, under the competition of rival horse railroads, there has been accommodation better

and cheaper than ever before; new sections of the city have been developed, and public necessity and convenience have been regarded. That competition has ended, and with it its benefits. The city is now wholly dependent for this transit upon the Cambridge Railroad Company, unrestrained by the competition of any rival. It is in the power of that company, by its policy, greatly to retard or hasten the prosperity of the city. There has been and is very great complaint amongst our citizens at the recent raising of the fares and the insufficiency of the accommodation furnished. The City Council of last year, expressing this feeling, by a unanimous vote requested the company to reduce the fare to the old rate of five cents. To this request the company has but partially acceded for reasons stated. I bring this matter to your attention, to remind the Board of Aldermen that its control is within their power. The city has freely granted, without a dollar of compensation, important and valuable rights and privileges to this company. Every foot of its track in our streets has been located, and may be removed by the authority of the Board of Aldermen, as in their judgment, public necessity and convenience may require. This power has been granted to the Board by the State, not as an idle power to remain unused, but as a power of control, to be actively exercised whenever public exigency may demand. Its use then, is the rightful use of a legitimate power for the public good. While I believe the city should deal fairly and liberally with this, as with every corporation, it should be remembered that this, unlike other corporations, has important duties it owes to the public. Because and only because of its public

duties, the public have given it special rights and privileges, and allowed it in our streets. No fair man would wish, nor is it for the public interest to cripple the road, or prevent its earning a reasonable profit for its owners; but it is your special duty to see that it fully and faithfully discharges its obligations to the public; and, if it proves unfaithful to that trust, it is not only the right, but the imperative duty of the Board to exercise all their powers. The instances, that have been brought to my notice, of the injury the raise of fares has caused to our city, in her competition with other suburban cities of Boston, have made it my duty to bring the subject to your attention. I know of no greater benefit the Cambridge Railroad Company can confer on the city, than to restore the old rate of fare.

I ask you now to examine in detail the financial condition of the City, the work of the departments and their needs.

FINANCES.

Our liabilities at the close of the financial year (Nov. 30, 1886) were as follows:

FUNDED CITY DEBT.

Bonds outstanding	$1,696,000 00
Sinking fund for payment of same	467,182 12
Net funded city debt	$1,228,817 88

FUNDED CITY DEBT OF 1885 AND 1886 COMPARED.

	1885.	1886.
Funded city debt	$1,838,000 00	$1,696,000 00
Sinking Fund	542,954 20	467,182 12
Net funded city debt	$1,295,045 80	$1,228,817 88

$167,000 of bonds have matured during the year and been paid from the sinking fund; $25,000 of bonds have been issued, to build a main trunk sewer to the Belmont District, making a decrease of $142,000 in the funded debt. The sinking fund has decreased $75,772.08, by the payment of the bonds matured, ($167,000) less the payment to the sinking fund and its income ($91,227.92). The net decrease of this debt is $66,227.92.

By act of the legislature of 1885 the limit of net indebtedness of cities, with a few exceptions, is fixed at $2\frac{1}{2}$ per cent of the average valuation of each city for the past three years. In Cambridge this average valuation, less abatements, is $55,185,103. The limit of indebtedness is $1,379,627.57, or $150,809.69 more than the present net debt. During this year there will be paid into the sinking fund $59,000, which, with the income of the fund (about $23,000) will make the difference between our debt and its legal limit about $233,000, if no new debt is created.

FUNDED WATER DEBT.

Bonds outstanding	$1,865,500 00
Sinking fund for payment of same	892,005 97
Net funded water debt	$973,494 03

FUNDED WATER DEBT OF 1885 AND 1886 COMPARED.

	1885.	1886.
Bonds outstanding	$1,747,500 00	$1,865,500 00
Sinking fund for payment of same . .	874,373 38	892,005 97
Net funded water debt	$873,126 62	$973,494 03

$100,000 of bonds have matured and been paid from the sinking fund: $218,000 of bonds have been

issued, of which $125,000 was for Stony Brook construction account, $75,000 for the purchase of land around Fresh Pond by authority of the City Council, and $18,000 for general construction account, as is customary each year,—making an increase of $118,000 in the funded debt. The sinking fund has increased $17,632.59, by its receipts, $117,632.59, less $100,000 paid on its matured debt. Of its receipts $57,675 is the required payment to the sinking fund, $46,464.55 is income and premium, and $13,589.34 is the surplus of water rates, which by law is added to the sinking fund. The net increase of this debt is $100,-367.41.

The water debt and expenses are kept separate and distinct from those of the city, and are taken care of by the revenue of that department. Its revenue has paid all its expenses, including maintenance, and has provided a sinking fund that will easily pay its debt at maturity. Last year there was a surplus revenue of over $13,000. More than three-quarters of its entire debt matures by July 1, 1896. As this debt is paid, the surplus each year will be larger. When the Stony Brook extension is finished and its cost determined, it is probable a further reduction of water-rates can be made. The total cost of the construction of our Water Works, including the amount paid in 1865 for their purchase, land, buildings, reservoirs, engines, equipment and hundred miles of pipe, has been $2,294,043.39. Its net debt is $973,494.03. Its revenue has paid the balance or made provision for its payment. Its financial condition is extremely satisfactory.

OTHER LIABILITIES.

The indebtedness of the city, not included in the funded debt, is as follows :—

Contingent note belonging to the sinking fund of the Water Works	$200,000 00
Trust Funds	26,000 00
Note due Oct. 1, 1887, given for purchase of Latin School	6,500 00
	$232,500 00

The note of $200,000 was given in 1883 in settlement of balances due from the city to the water sinking fund for surplus water receipts since 1865, which had been paid into the treasury instead of to it as required by law. Payment is contingent upon the rest of that sinking fund being first exhausted. The note of $6,500 was given in 1885.

There has been a decrease of the unfunded liabilities of the city during the year of $5,250 in the item "Trust Funds." This amount had been paid into the treasury in various years, prior to Dec. 1, 1883, in trust for the perpetual care of lots in the Cambridge Cemetery, but had been used when received, and not kept as an income-earning principal. The City Council of last year restored this principal from the surplus in the treasury, and it is now safely invested together with the money since received, in all $8,975. This action seems to me to have been wise and proper. Not only should we keep intact any fund paid to the city in trust, but we should, as soon as possible, restore all funds that have not been so kept. I, therefore, renew my recommendation of former years that further steps be taken in this direction.

Gentlemen of the City Council : The city is now in a

sound financial condition. Her funded debt has been decreased and her unfunded liabilities reduced. Both are within a reasonable limit. There is not a dollar of floating debt, all bills are paid, and nearly $50,000 in the treasury. The tax-rate has been reduced from $16.80 in 1884 to $15.50 in 1885 and $15.00 in 1886. I commend these facts to your attention, with the hope that our year of service may be as beneficial to the finances of the city.

SCHOOLS.

There has been a very large and unusual increase in the number of pupils at our schools the last two years,—589 in 1885, and 308 in 1886. This has taxed our accommodations to their utmost limit, and required a heavy expenditure for building new school houses, and enlarging old. The amount expended last year for this purpose was $35,632.68, all of which was raised by taxation without debt. The work on the new Latin School and the enlargement of the Webster School were finished; an addition was made to the Wyman School, and a new primary school built in Ward II on Jefferson Street. Further accommodations are imperatively needed. The School Committee has asked the City Council for a new grammar school building in Ward III, and for a building in Ward V for grammar and primary classes. It has been suggested that these buildings may be so planned, that a wing may be built this year, which would be sufficient for the present; and the rest finished as needed. The Latin School is already crowded, and the addition of another

room necessary. These requests and suggestions are respectfully submitted for your consideration. The separation of the English and Classical Departments of the High School, decided upon in 1885, was carried into effect last year: the latter department, under the name of the Cambridge Latin School, was transferred to the new building on Lee Street. This separation has proved a marked success, exceeding the hope of its warmest advocates. Both departments apart are stronger, healthier, and more efficient than when united. Each has grown into a larger life and a wider sphere of usefulness. The city was fortunate in obtaining for the head of the English School, Mr. Frank A. Hill, a trained and able teacher, who has brought new life to the school. The Latin School also is extremely vigorous. At present there is but one course of instruction given in preparing pupils for college,—the old one of Latin, Greek and Mathematics. As Harvard has given an option amongst many courses, it would seem proper to furnish in our preparatory schools the means to make this option available.

The school at the almshouse, hitherto under the charge of the School Committee, has been transferred to the Overseers of the Poor, its legal guardians in the opinion of the City Solicitor. They have introduced into the school a system of industrial education, with very gratifying success. The School Committee has determined to try the same experiment in a very limited way in the public schools. For this purpose they asked for an appropriation of $400, which has just been granted. I heartily concur in this action, and anticipate success to the experiment.

I herewith submit the usual

SCHOOL STATISTICS FOR 1886.

Number of pupils on the first of December	9,918
Increase during the year	308
Number of teachers on the first of December	233
Increase during the year	9
Cost of the day schools, not including expenditures for new school houses and new furniture	$207,536 46
Increase over last year	$730 37
Cost of the schools per pupil	$22 51
Decrease from last year	$1 39
Cost of evening schools	$1,325 90
Cost of drawing schools	$971 10
Amount expended for new school-houses and new furniture	$35,632 68
Increase over last year	$17,543 67
Total expenditures for all school purposes	$245,466 14
Deducting receipts from Hopkins Fund ($668.63) and for tuition of non-resident pupils ($305), actual cost of the schools to the city	$244.492 51
Increase over last year	$18,084 69
There was an unexpended balance of appropriations of	$5,008 86

Of the educational institutions directed by the city, none has more patiently waited to have its wants answered than the

CAMBRIDGE PUBLIC LIBRARY.

The quarters are entirely insufficient and a great hindrance to effective work. It needs a building of its own. For years successive Mayors of this city have issued in their Inaugural Addresses, a cordial invitation to our citizens to supply this need. But the invitation is not yet accepted. For the third time I earnestly renew it. With the great pressure for unusual expenditures that must be made this year, I do not believe the city can erect a library building; but I would recommend

that it provide other and larger accommodations. The library now has 18,372 volumes, an increase during the year of 855 volumes. A new catalogue, for which a special appropriation was made, has been commenced. Of its appropriation of $8000, there is a balance unexpended of $1,106.53.

WATER WORKS.

The work of this department the past year has been important. Much has been done on the Stony Brook construction, and in preparing Fresh Pond as a suitable reservoir to receive the new water supply. The basin at Stony Brook has been thoroughly scraped and cleaned; the dam, which was commenced in the spring of 1885, is nearly finished, though delayed longer than expected. The pipe is all laid, properly connected and tested. The gate chamber and house will be finished by early spring, when it is hoped the water of Stony Brook will flow freely and abundantly into Fresh Pond, giving the city an almost inexhaustible water supply.

There has been expended during the year for this work $122,652.42, making a total expense thus far of $427,394.66, including $33,803.75 for work done at Fresh Pond. It is estimated that the cost of completing the work will be about $53,000, exclusive of land and water damages. The balance unexpended of this appropriation is $93,192.46.

As this is probably the last season that Fresh Pond will be so low as to allow effective work on its shores and bottom, such work has been vigorously prosecuted. The whole north shore has been built up and riprapped; and

the driveway extended nearly around the pond. A fair and reasonable settlement of the litigation between the city and the Black estate has been made; Black's Nook is at last dammed, and no longer a source of danger to the pond. With the consent of the City Council and by its authority, the Water Board has made further purchase of land around the pond. The city now owns all but 1,670 feet of a total of 15,000 feet of its shore. The site of the recently burned ice houses, near the Pumping Station, has been bought. As Kingsley Park it now is a beautiful place, in marked contrast to its former unsightly appearance. The Water Board has under consideration the further deepening of portions of the pond, where its bottom is now from one to three feet out of water. The work of making Fresh Pond a pure and proper reservoir has also made of it a most attractive park with a driveway around it, unequalled in beauty by any in this vicinity. This has been an incidental result of necessary work at a very slight additional expense.

In my last Inaugural Address I spoke in detail and with commendation of the strong financial condition of this department. The experience of another year fully justifies and emphasizes what was then said. It is certain that the department can easily carry the heavy expenses recently incurred, pay its own way, meet all its debt at maturity, and probably in the near future make a further reduction of the water-rates.

Its income last year was			$207,238 66
Its expenses were, General construction . .	$ 1,048 98		
Maintenance	29,858 33		
Supplies	5,943 62		
Amounts carried forward	$36,850 93		$207,238 66

Amounts brought forward	$36,850 93	$207,238 66
Interest	99,015 00	
Sinking fund	57,675 00	$193,540 93
Surplus		$13,697 73

STREETS.

Perhaps in no department an insufficient appropriation does more for the discomfort and inconvenience of the public than in the street department. A thorough care and repair of our streets are required by law, are essential to the comfort of every traveller, and necessary for the protection and welfare of the city. Large appropriations for this purpose have been made the past two years, and one unusually large for paving the past year. Much good has been done, but much yet remains to be done. Fifty-three streets have been graded in whole or in part. The paving of Main Street has been extended from Pelham Street to Portland Street, at an expense of $15,870.92; of Harvard Street on the northerly side from Dunster Street to Bow Street at an expense of $4,000; and of Putnam Avenue from Mt. Auburn Street to Green Street. $8,650 has been spent in general paving, curbstones, cross-walks and brick sidewalks. I recommend that the paving of Main Street be extended this year to Lafayette Square, at an estimated expense of $18,192.74; and of the south side of Harvard Street, from Dunster Street to Bow Street, at an estimated expense of $3,021.42. I hope that much improvement may be made in the condition of our streets the coming year, and that whatever expense is thus incurred may be treated as a current annual expense, as heretofore, and not be met by a loan. The Superintendent recommends increased appropriations

for care and repair of streets, for paving, and for shade trees and public grounds; also, the purchase of a steam roller, which recommendations are respectfully submitted for your consideration. A bulkhead should be built on the river side of Mt. Auburn Street, to protect the street from further inroads of the river; and the southerly end of Holyoke Street should be widened so that teams may pass each other. It is now in a dangerous condition. The appropriations for this department last year were: repairs, $85,000, unexpended, $733.58; paving, $29,-870.92, unexpended, $1,349.98; widening, $2,000, unexpended, $33.75; watering streets, $21,602.48, unexpended, $25; shade trees and public grounds, $4,500; unexpended. $49.45. A large proportion of the appropriation for repairs of streets is used in the collection of ashes.

BRIDGES.

Our principal bridges (West Boston, Canal and Prison Point) are under the joint charge of Cambridge and Boston, and kept in repair at their joint expense. The most important work of the year in this department has been the re-building of the northerly side of the Cambridge end of West Boston Bridge at a cost of about $7,000. The work was done under the constant, careful supervision of our Bridge Commissioner and with very little interruption to travel. The southerly side needs extensive repairs. Some provision must be made for a house for the draw-tender, as his old house has been taken by the city of Boston for park purposes. Canal Bridge has been much strengthened by driving additional piles and add-

ing new stringers and bolsters. The draw pier and wharf need some repairs. Prison Point Bridge has had slight repairs and is now in good condition. The appropriation for this department was $12,000. Balance unexpended, $1,556.35.

SEWERS.

There have been constructed the past year $2\frac{404}{1000}$ miles of new sewers at a cost of $19,579.49, making a total of $73\frac{834}{1000}$ miles of sewer in the city. The principal new sewers have been laid in Lowell, Raymond, Parker, Mt. Auburn, Broadway, Fifth and Spring Streets and Marsh Court. The Charles and Sixth Street sewer has been re-built at a cost of $6,302.15. Care has been taken in building the Lowell Street sewer to make it sufficiently large at and near its outlet, to accomodate the sewage from the Belmont District. After many years of patient waiting, this district will soon have its long promised and much needed relief. Near the end of last year the City Council authorized a loan of $25,000 to build a main trunk sewer for this purpose. The work is well under way, and will be finished in time to receive the spring freshets that for years have flooded much of the district. The City Engineer recommends, as special work for this year, a sewer for the Saville Street District at an estimated cost of $8,500; larger and better accommodation for the Shepard Street and North Avenue District, for which he suggests three plans, at an estimated cost for the least expensive of about $22,000; and the re-building of the Sparks Street sewer at an estimated cost of

$6,000, all of which recommendations are respectfully submitted for your consideration.

I must again call the attention of the City Council to the intolerable nuisance at the outlet of the Bridge Street sewer, with regret that I cannot suggest any permanent remedy. Much relief is obtained each year by a thorough dredging and cleaning of the outlet. This involves an annual expense of about $2,500, which is shared by the City of Somerville. The only complete remedy would be to carry the sewer out to deep water in Boston Harbor, which seems entirely impracticable. I would suggest for your consideration, if further relief cannot be had by some control over the very offensive sewage that is discharged into it from the large slaughtering houses.

A suit for a large amount has been brought by Henderson Brothers against the city for alleged damage caused them by the sewage in Alewife Brook. During the year the brook has been constantly kept clean, and but few complaints have been made. At the same time the brook is not a fit outlet for our sewers; it is only a question of time when the city must solve the extremely difficult problem of finding a proper substitute for it.

In this connection I would call your attention to what is altogether the most important matter of drainage that has ever affected this city. The Commission appointed by the State, to consider a general system of drainage for the valleys of the Mystic and Charles Rivers, made its report to the Legislature of last year, which referred the subject to its successor. Some action is likely to be taken this year. The details of the report were stated in

my last Inaugural Address. It provides for the drainage of Cambridge in a way which, in the opinion of many, seems open to serious objections. 1st. It divides the city into two districts and commits it to two different systems of drainage,—one experimental, ending in a filtration basin on the Lynn meadows, the other believed to be inadequate for the purposes planned. 2d. It makes no provision for surface water or subsoil drainage. 3d. It provides that the sewage of Charlestown and Somerville shall be carried up the river to a point near the Brookline Bridge, and there pumped across the river, making a nuisance in that section of the city, perhaps as great as any from which it plans to relieve us. 4th. It puts upon the city an estimated expense of about $600,000, and an annual expense of over $30,000,—with the probability, as experience teaches, of the estimates being exceeded. 5th. The cost of the whole system seems to be very unjustly distributed, to the disadvantage of Cambridge, and the advantage of other cities. 6th. The benefit to this city seems to be entirely out of proportion to the burden it imposes. 7th. There is no present need of any such system for this city.

I mention these objections, which are largely matters for expert opinion, to show the grave importance of the subject, and the need of its most careful consideration. While its decision is beyond the control of the city, I cannot but believe that her opinion, properly and emphatically expressed, will have great weight with the Legislature. I recommend for your consideration, whether it would not be wise for the city at once to employ competent, expert assistance ; and further, to provide some

way of obtaining an expression of opinion from our citizens.

The appropriations for the sewer department last year were: For Construction, $22,000, balance unexpended, $665.86; for Maintenance, $23,000, balance unexpended, $28.00;—besides the special appropriation mentioned for the Belmont District.

STREET LAMPS.

With sincere regret for the great loss the city has sustained, I mention the recent death of the Superintendent of Lamps, Benj. F. Nourse, who for nearly ten years has served her most faithfully and honorably.

During the year seventy new lamps have been located, making a total of 1,124 now maintained by the city. The cost of maintenance has been $31.32 for each gas lamp, and $14 for each oil lamp. A new contract was made with the Cambridge Gas Light Co. in April last, to run three years, by which the price of gas was reduced from $1.65 per thousand feet to $1.50, effecting a saving for the year of $1,164.88. By express reservation in the contract, the city may at any time discontinue the use of any of its lamps. This leaves the city free to introduce or extend any other system of lighting at its pleasure. I am very happy to say that arrangements have been made for the use of electric lighting in our main streets and squares. By authority of the City Council a contract was made on the 15th of last December with the Cambridge Electric Light Co., by which Main and Cambridge Streets, for their entire length, North Avenue from Harvard Square to the Lexington and Arlington Railroad,

and Brattle and other squares, connected with these routes, are to be lighted by electricity. The number of lights needed is estimated at 70; the cost is 55 cents per lamp per night, burning all night, or a total cost, (estimating for 339 nights per year) of $13,051.50. 155 gas lamps will be displaced which cost, to maintain, $4,860.50. The net additional expense in $8,191. How far this new and improved system of lighting shall be extended is for you to determine. I believe no expenditure is more wise or economical than for the comfort, safety and protection that come from well lighted streets, and I therefore recommend the matter to your favorable consideration.

The appropriation for this department last year was $33,500, balance unexpended, $1,921.29.

POLICE DEPARTMENT.

Two members of the force have been discharged during the year for cause, five have resigned, one of them, by request, for physical disability. Among the others were Sergeant Dalton, who had been an efficient Inspector for three years, and Officer Moore, who had served the city faithfully for nineteen years. Their places have been filled under the civil service law, and in every instance by the one standing highest on the list certified to me by the examiners. By my request, an examination has been held for promotion to the vacant sergeantcy, open to all who have been at least two years on the force. From practical experience I again most heartily commend the working of the Civil Service law. Under it I believe the police force has much improved. Members are now appointed solely for their merit, with no other purpose

to serve than a faithful discharge of their duty, and with full assurance that their tenure is secure so long as they are faithful. The principle of the law I have extended to govern promotion; this I trust will become the established practice. Each officer will then have an additional incentive to become proficient in his duties, and vigilant in their performance.

The Chief of Police recommends the adoption of the Police Signal system, in which recommendation I concur. By this system, boxes, like fire alarm boxes, with electric signals and communication, are established at various points where needed. Any officer or citizen, wishing police assistance, signals through the box, and instantly a patrol wagon with officers responds. Arrested persons are conveyed in it to the station, without requiring an officer to leave his beat, and it is always ready to serve as an ambulance wagon. The system also keeps a record of the movements of all officers while on duty, and furnishes telephonic communication between them and their stations. It is in successful operation in many cities, and has recently been introduced in the City of Boston. The expense of the system depends upon the number of boxes established. With 18 or 20 boxes, located at important places, its cost, including horses and wagon, would probably be between three and four thousand dollars. Its benefit, I believe, would be equivalent to a large increase of the force.

The Chief of Police thinks such an increase is necessary and recommends an addition of ten men to the force. No doubt some beats are not at present well covered, and more officers would be of great service. As, however,

our force, compared with that of other cities, is large, and the introduction of the Police Signal system may commend itself to your judgment, I cannot recommend so great an increase. If later in the year more are needed for special work, I shall not hesitate to bring the matter to your attention.

The enforcement of the prohibitory liquor law after the 1st of May, is the special duty of the police that will be watched with greatest interest. It is a duty that rests upon every officer and none can escape the responsibility. I know that you will support by every means in your power the faithful performance of this duty, and that the Board will sustain me in punishing the neglect of any officer.

The appropriation for the police department the past year was $80,467.25, balance unexpended, $62.81

In connection with this department, I would refer to the excellent work of the

PROBATION OFFICER.

During the year he has investigated 1,410 cases. 117 persons have been placed on probation under his charge. Of these but eight did not improve and were sentenced; 73 have reformed and are leading respectable lives, and 26 are still on probation. Seldom has one, put on probation, been again convicted of any offence. In his opinion, the reformation is permanent. Surely this is a worthy record of the mercy and humanity of the law, and of the usefulness of such an officer.

FIRE DEPARTMENT.

The work of this department has been increasing the

last few years. Last year the number of alarms was 137, an increase of 19 over 1885, and of 57 over 1884. The loss of property was $147,086. In view of this fact, the City Council deemed it just to raise the pay of the members to the old rate existing in 1878. The increase took effect on the 1st of this month, and amounts in all to the sum of $2,117.

A new hose-wagon and two hose pungs have been purchased; thorough repairs have been made on Steamer 4 and on the Chemical Engine; all the apparatus is reported now to be in good condition. A bell and striker have been placed in the Belmont District.

The Chief Engineer, in his report, calls attention to two serious needs of his department, which, in my opinion, must be met this year. The old shed, which has been occupied by Hook and Ladder No. 2, and for years has been condemned by the chief, is not fit for further use; the city having sold last year the land upon which it stands, it is necessary to provide another building. There is also a public demand and a public necessity for another fire engine, especially to protect Wards II and IV and their large manufacturing interests. This, of course, involves a building for the engine and an increase of the members of the department. The City Council gave the subject some consideration last year, but were in doubt as to the proper location for the new engine; finally they referred the whole matter to you for your decision. It seems to be necessary that Hook and Ladder No. 2 should remain in Ward II, and that the new engine should be located in Ward IV, which has now no engine except the Chemical, I would suggest for your considera-

tion if the best and least expensive way of meeting both these needs, and at the same time best protect the whole city, would not be,—to erect on the city land at the corner of Broadway and Sixth Street a building large enough to hold the Hook and Ladder truck and the Chemical Engine; then substitute the new engine for the Chemical in the Central Square Building. This will save the erection of a second building, and the purchase of land; give a better location for the truck than it now has, and the best possible location for the new engine, within easy reach of the large factories in Wards II and IV.

The appropriation for this department last year was $59,500, balance unexpended $1,124.02.

ALMSHOUSE AND THE POOR.

415 persons have been supported by the city the past year, besides many who have been aided. Of this number 302 were at the almshouse, 96 at State Lunatic Hospitals, and the others at criminal institutions. The average monthly number at the Almshouse was 155, an increase of 10 over the prior year. Of the number (149) at the Almshouse at the end of the year, 30 were persons mildly insane. There is a large increase each year of the insane supported by the city. Last year there were 33 new cases. The amount paid to the State for its care of our insane last year was $12,400.74, an increase of $1,610.56 over 1885. This large expense and the fact that the State Institutions are over-crowded will soon make it necessary for the city to make other provision for the care of her insane. I again commend the subject to the serious consideration of the City Council.

The new cottage on the Almshouse grounds has been finished. It is found to be very useful and well adapted for its purpose. New boilers and heating apparatus, long needed, have been put in the Almshouse at a cost of $2,801.07.

Perhaps the most interesting change connected with the Almshouse has been the introduction of industrial education for the boys in the school. While as yet it has had but a limited trial, enough has been done to show its entire success. The Warden in his report says "the success of the experiment is well established. The boys are more contented and happy, more easily controlled, and the constant stimulus of 'something attempted and something done' gives self-reliance and promise of a prosperous and useful future." If this is the result with boys very young, most of whom are so incorrigible as to have utterly failed in other schools to make any progress, —how promising its success, if introduced as part of our public school system!

With pleasure I again commend the kind, efficient and successful management of the Cambridge Almshouse. As contemplated by law, it is in fact a home for our unfortunate, helpless poor, and not a place for their punishment and correction.

The expenses of this department have been as follows:

Expenditures, outside aid (including $12,400.74 paid for the care of insane at State Hospitals,)	$23,856 54
Receipts	4,603 74
Net cost	$19,252 80
Expenditures, Almshouse, Farm and Ledge	$23,718 48
Amount carried forward	$23,718 48

Amount brought forward	$23,718 48
Receipts	7,354 70
Net cost	$16,363 78
Net cost for care of the poor	$35,616 58

The expense of collecting house offal, which is under the voluntary charge of the Overseers of the Poor, has been	$14,931 84
Receipts	6,951 23
Net cost	$7,980 61

THE CAMBRIDGE CEMETERY.

Very great improvement has been made in the Cemetery by the addition of the Winchester estate. A portion of it has been graded and prepared for burial purposes with good taste and judgment, and contains some of the most desirable burial lots. The rest, with its tall trees and gentle slopes, adds much to the beauty of the grounds. It is proposed to take a portion of the mansion house, and fit it up for use as a chapel, where burial services may be held. The Commissioners of the Cemetery state that the greatest need is for a new and larger receiving-tomb.

The old Burying Ground on Garden Street, near Harvard Square, where lie many of the early settlers of our town, and generations of its distinguished dead, has in past years fallen into sad neglect. The City Council last year placed it in charge of the Cemetery Commissioners, who have much improved its condition. Let us hope that hereafter reverential care may keep it really sacred to the memory of the dead.

The appropriation for this department last year was

$14,800, balance unexpended $19.84. Its receipts were $15,125.

BUILDING ORDINANCE.

After careful and thorough investigation with the aid of experts, the City Council adopted early last year an elaborate ordinance, prescribing certain requisites for the safe and proper construction of buildings within the city limits; after a trial of six months, the ordinance was carefully amended where it had been found defective. Under its provisions the duty devolved upon me of selecting, with the concurrence of the Board of Aldermen, a proper person to carry out the ordinance, and also to act as Superintendent of Public Buildings. Mr. Benj. H. Steele was chosen for the position, in February last. I heartily commend the success of the ordinance under his faithful, impartial direction. Since March 1 he has inspected the construction of all new buildings and the condition of many old ones; has found 35 buildings in a dangerous condition in some respect and had them made safe; corrected 23 violations of the ordinance, and kept a record of the number, character and location of all new buildings, in addition to his work of superintending the repair and construction of all city buildings. It is interesting to know, as showing the growth of the city, that, from that date to Nov. 30, 425 permits for building have been granted, including 9 apartment hotels, 17 factories, 69 dwelling-houses in blocks, 159 single dwelling-houses, 42 buildings for stores and shops, and 2 churches. Of the permits 85 were granted for Ward 1; 110 for Ward II; 42 for Ward III; 107 for Ward IV; and 81 for Ward V.

This constant and gratifying growth of our city has not failed to make new demands upon her, and more work for her to do. All departments have felt the strain, especially those that deal with taxation, accounts and finance. The concentration of all accounts in the Treasurer's office, and the Weekly Payment law have made still further work for him and the Auditor. From time to time temporary clerical assistance has been employed, and been shifted between the different departments. I believe a larger clerical force is necessary, and that it should be reorganized on a permanent basis; and I recommend your early consideration of this subject.

In ending this hurried glance we have taken of the past and the future, I hardly need remind you that there is one other and great work, that I hope may receive your prompt, earnest and unanimous encouragement. The

NEW BRIDGE TO BOSTON

is the one necessity, the one great public improvement, upon which all our citizens are agreed. For two successive years the City Council has promptly and emphatically expressed the wish of this city to join with Boston in the immediate building of the bridge, and to bear one-half of its expense. It seems strange that Boston should delay to act. This bridge, that will relieve our present narrow and half-choked connecting thoroughfares; that will bring more easily to Boston 60,000 people for trade and pleasure; that will form part of her beautiful park system; and hasten more than any other step, to relieve her from the sewage in the River, and the

unsightliness and nuisance of its flats, would seem to be a sufficient benefit, to make her ready to bear a burden that, with her valuation, is but $\frac{1}{16}$ of the burden that we are willing and anxious to assume. I recommend that again we take prompt action on this subject, in the earnest hope that the city of Boston will no longer delay to join us.

Gentlemen of the City Council:—

The interests of this old historic city now are placed in our hands, to be zealously served and courageously defended. Grandly she has lived her life of more than 250 years. Eight generations of her sons at her knee have received the blessings of religion and education. Tenderly she has ministered to the poor; proudly she has watched the success of all her children; faithfully she has administered her every trust. No heart beat more warmly in sympathy with the great heart of the nation in the hours of trial, suffering and struggle; no hand stretched out more promptly to uphold a nation's cause. Year by year her life has broadened out into a wider field of usefulness. The prayers and faith of the early founders have given to us a priceless heritage.

Proudly we read her record of honorable distinction; loyally we cling to her as the blessed mother that watches over us; lovingly as her children we take up her work.

With gratitude for the privilege of again serving her, I enter now for the last time upon the duties of my office, by laying at her feet this humble tribute of a loving son. God bless the old city of Cambridge, and keep us steadfast in her service.

ANNUAL REPORT

OF THE

AUDITOR OF ACCOUNTS.

Gentlemen of the City Council:—

THE undersigned, in compliance with a city ordinance, herewith presents the fortieth annual report of the receipts and expenditures of the City of Cambridge, being for the year ending November 30th, 1886.

Total receipts for the year		$2,300,794 57
Add the amount in treasury, Dec. 1, 1885 . .		60,917 36
		$2,361,711 93
Total expenditures for the year		2,264,507 88
Balance,		$97,204 05
Less amount unexpended from sale of sewer bonds (Belmont Loan) . . .	$16,891 56	
Less amount unexpended from sale of water bonds { Fresh Pond Land Loan	13,020 20	
{ Stony Brook Loan	18,192 46	
		48,104 22
Balance in treasury Nov. 30, 1886		$49,099 83
There has been an increase in the water debt of the city during the year of $218,000.00 caused by the issue of seventeen registered water loan bonds, payable in twenty-five years, at an annual interest of $3\frac{1}{2}$ per cent . .		$175,000 00
Amount carried forward		$175,000 00

Amount brought forward	$175,000 00
Also three registered bonds payable in twenty years, at an annual interest of $3\frac{1}{2}$ per cent . .	43,000 00
Total	$218,000 00
Less amount matured during the year . . .	$100,000 00
	$118,000 00

Of the city funded debt there have matured during the year:—

City Loan Bonds	$100,000 00
Low Land Loan Bonds	60,000 00
Street Widening Loan Bonds	7,000 00
	$167,000 00

There has been an increase in the city funded debt during the year of $25,000.00 caused by the issue of one registered bond, as follows:—

A Sewer Loan, dated Nov. 1, 1886, payable in ten years, at an annual interest of $3\frac{1}{2}$ per cent, (to pay for a trunk sewer from the Belmont district)	$25,000 00

The following is a statement of the temporary loans negotiated during the year and the rates of interest on the same:—

Jan.	27,	1886,	$100,000	Int.	$2\frac{3}{4}$	per cent	payable	Oct.	11, 1886
Feb.	20,	"	50,000	"	$2\frac{7}{8}$	"	"	"	" "
Mar.	9,	"	50,000	"	$2\frac{15}{16}$	"	"	"	12 "
July	8,	"	150,000	"	$3\frac{1}{8}$	"	"	"	" "
Aug.	10,	"	50,000	"	$3\frac{7}{8}$	"	"	"	13 "
Sept.	1,	"	50,000	"	5	"	"	"	" "
			$450,000						

THE CITY DEBT.

	1886.	1885.
Funded City Loan	$1,696,000 00	$1,838,000 00
Funded Water Loan	1,865,500 00	1,747,500 00
Amounts carried forward .	$3,561,500 00	$3,585,500 00

Amounts brought forward .		$3,561,500 00	$3,585.500 00
Note to Cambridge Savings Bank		6,500 00	6,500 00
Contingent Loan, being a City Note to Trustees of Sinking Fund of Water Works . . .		200,000 00	200,000 00
Trust Funds:—			
Dowse Institute Fund	10,000		
Sanders Temperance Fund	10,000		
Daniel White Charity	5,000		
Fay Fund	1,000		
		26,000 00	31,250 00
The Gross City Debt . . .		$3,794,000 00	$3,823,250 00
Less amount in both Sinking Funds			
City Sinking Fund $467,182 12 Water Sinking Fund 892,005 97		1,359,188 09	1,461,853 50
		$2,434,811 91	$2,361,396 50
The increase of the net city debt from last year			$73,415 41

THE FUNDED DEBT.

Following is a statement of the total funded debt of the city, with the dates of maturity and rates of interest thereon:—

City Loan.

Due April 1, 1889,	int. 5	per cent,	25	yrs.	$100,000
July 1, 1890,	" 6	"	20	"	20,000
Jan. 1, 1893,	" 5	"	30	"	150,000
					$270,000 00

Land Loan,

Due July 1, 1893,	int. 6	per cent,	20	yrs. . . .	10,000 00

Low Land Loan.

Due Oct., 1887,	int. 5	per cent,	10	yrs.	120,000 00
Amount carried forward					$400,000 00

Amount brought forward						$400,000 00

Paving Loan.

Due July 1, 1893,	int. 6	per cent,	20	yrs.	$100,000	
July 1, 1894,	" 6	"	20	"	130,000	
July 1, 1895,	" 6	"	20	"	25,000	
						255,000 00

Sewer Loan.

Due Oct. 1, 1895,	int. 6	per cent,	20	yrs.	$20,000	
July 1, 1896,	" 6	"	20	"	29,000	
July 1, 1903,	" 6	"	30	"	136,000	
July 1, 1904,	" 6	"	30	"	295,000	
July 1, 1905,	" 6	"	30	"	144,000	
Nov. 1, 1896,	" $3\frac{1}{2}$	"	10	"	25,000	
						649,000 00

Street Loan.

Due July 1, 1893,	int. 6	per cent,	20	yrs. . . .		13,000 00

Street Widening Loan.

Due July 1, 1903,	int. 6	per cent,	30	yrs.	$10,000	
July 1, 1904,	" 6	"	30	"	90,000	
July 1, 1905,	" 6	"	30	"	14,000	
						114,000 00

Municipal Loan.

Due April 1, 1895,	int. 4	per cent,	10	yrs. . . .		200,000 00

Cambridge Cemetery Loan.

Due Aug. 1, 1905,	int. 4	per cent,	20	yrs. . . .		65,000 00
Total funded City Loan						$1,696,000 00

Water Loan.

Due April 1, 1887,	int. 6	per cent,	20	yrs.	$150,000	
April 1, 1888,	" 6	"	20	"	175,000	
May 1, 1889,	" 6	"	20	"	112,000	
Amounts carried forward . . .					$437,000	$1,696,000 00

	Amounts brought forward . . .					$437,000	$1,696,000 00
Due July	1, 1890,	int.	6	per cent,	20 yrs.	60,000	
May	1, 1891,	"	6	"	20 "	50,000	
July	1, 1892,	"	6	"	20 "	335,000	
April	1, 1894,	"	6	"	20 "	150,000	
Nov.	1, 1894,	"	4	"	10 "	36,000	
April	1, 1895,	"	6	"	20 "	160,000	
July	1, 1896,	"	6	"	20 "	103,000	
July	1, 1897,	"	6	"	20 "	16,000	
July	1, 1898,	"	5	"	20 "	12,500	
May	1, 1910,	"	4	"	25 "	288,000	
April	1, 1911,	"	$3\frac{1}{2}$	"	25 "	100,000	
July	1, 1911,	"	$3\frac{1}{2}$	"	25 "	75,000	
Nov.	1, 1906,	"	$3\frac{1}{2}$	"	20 "	43,000	
							$1,865,500 00
Total Funded Debt							$3,561,500 00

Recapitulation.

Amount of funded City Loan upon which interest is at 6 per cent.		$1,036,000 00
Amount of funded City Loan upon which interest is at 5 per cent.		370,000 00
Amount of funded City Loan upon which interest is at 4 per cent.		265,000 00
Amount of funded City Loan upon which interest is at $3\frac{1}{2}$ per cent		25,000 00
		$1,696,000 00
Amount of Water Loan upon which interest is at 6 per cent. . . .	$1,311,000	
Amount of Water Loan upon which interest is at 5 per cent	12,500	
Amount of Water Loan upon which interest is at 4 per cent	324,000	
Amount of Water Loan upon which interest is at $3\frac{1}{2}$ per cent . . .	218,000	
		1,865,500 00
		$3,561,500 00

RECEIPTS.

The receipts of the year, as credited to the several city accounts, are as follows :—

NO.		
1.	Bridges, W. B. C. &c.	$434 30
2.	Cambridge Public Library.	2,745 51
3.	Cambridge Cemetery.	15,125 32
4.	Cemetery Fund	1,275 00
5.	City Buildings (care and repairs)	1,980 11
6.	City Lands	7,944 91
7.	Discount (Taxes)	40 20
8.	Engineering.	1 00
9.	Fire Department	254 15
10.	Incidental Expenses	50,372 61
11.	Interest	3,026 44
12.	Interest on Water Loan.	135 90
13.	Lighting Streets	59 46
14.	Loan, Sewer.	25,000 00
15.	Loan, Temporary	450,000 00
16.	Loan, Water	218,000 00
17.	Notes, Receivable	1,596 63
18.	Pauper Department	4,603 74
19.	Pauper Department, Almshouse	7,354 70
20.	Pauper Department, House Offal.	6,951 23
21.	Police Department	6,292 00
22.	School Department, Salaries	973 63
23.	School Department, Text Books and Supplies.	269 73
24.	School Houses, Care and Repairs	14 37
25.	Sewers, Construction.	8,372 52
26.	Sewers, Construction, Belmont	322 50
27.	Sewers, Maintenance.	1,747 71
28.	Sinking Funds, Commissioners of	167,000 00
29.	Sinking Fund of Water Works, Trustees of	100,000 00
30.	State Aid.	10,368 75
31.	Street Department, Paving.	1,531 37
32.	Street Department, Repairs	2,260 64
33.	Street Department, Watering	11,102 48
	Amount carried forward	$1,107,156 91

	Amount brought forward	$1,107,156 91
34.	Surrendered Estates, Sale Account . . .	7,424 39
35.	Tax, Corporation	47,006 25
36.	Tax, National Bank	16,618 01
37.	Taxes of 1880	4 00
38.	Taxes of 1881	18 00
39.	Taxes of 1882	76 98
40.	Taxes of 1883	124 92
41.	Taxes of 1884	1,220 68
42.	Taxes of 1885	50,731 65
43.	Taxes of 1886	855,731 00
44.	Water Works, Construction	233 70
45.	Water Works, Construction, Fresh Pond Land.	2,750 00
46.	Water Works, Construction, Stony Brook Supply	401 25
47.	Water Works, Rates, Fines, etc	204,002 46
48.	Water Works, Supplies	7,294 37
		$2,300,794 57

EXPENSES.

The disbursements of the year, as charged to the city accounts, are as follows:—

NO.		
1.	Abatements, Taxes	17,497 00
2.	Bridges	2,468 75
3.	Bridges, West Boston, Canal and Prison Point	10,443 65
4.	Cambridge Public Library	6,893 47
5.	Cambridge Cemetery	14,780 16
6.	Cambridge Cemetery Extension	947 81
7.	Cemetery Fund, Trustees of	6,525 00
8.	City Buildings, care and repairs	11,217 88
9.	Discounts, taxes	32,532 57
10.	Engineering	5,550 74
11.	Fire Department	58,375 98
12.	Health Department	2,788 70
	Amount carried forward	$170,021 71

	Amount brought forward	$170,021 71
13.	Incidental Expenses	44,204 83
14.	Interest	116,093 33
15.	Interest on Water Loan	99,015 00
16.	Lighting Streets	31,578 71
17.	Loan, City	100,000 00
18.	Loan, Low Lands	60,000 00
19.	Loan, Street Widening	7,000 00
20.	Loan, Temporary	450,000 00
21.	Loan, Water	100,000 00
22.	Pauper Department	23,856 54
23.	" " Almshouse	23,718 48
24.	" " House Offal	14,931 84
25.	Police Department	80,404 44
26.	Salaries	26,419 79
27.	School Department, Drawing Schools . .	971 10
28.	" " Evening Schools . .	1,325 90
29.	" " Incidental Expenses	645 94
30.	" " Salaries	165,277 42
31.	" " Text Books and Supplies	10,680 52
32.	School Houses, care and repairs	30,932 58
33.	School Houses, New and Furniture, High School	9,678 18
34.	" " " " Ward II	12,963 92
35.	" " " " Webster	9,113 93
36.	" " " " Wyman	3,876 65
37.	Sewers, Construction	21,334 14
38.	" Construction, Belmont	8,430 94
39.	" Maintenance	22,972 00
40.	Shade Trees and Public Grounds . . .	4,450 05
41.	Sinking Funds	63,055 00
42.	Sinking Fund of Water Works	57,675 00
43.	State Aid	13,137 00
44.	Stationery and Printing	3,194 85
45.	Street Department, Paving	28,520 94
46.	" " Repairs	84,266 42
47.	" " Watering	21,577 48
48.	" " Widening and Extension	1,966 25
49.	Tax, County	28,101 71
	Amount carried forward	$1,951,392 59

	Amount brought forward	$1,951,392 59
50.	Tax, National Bank	6,079 27
51.	Tax, State	46,740 00
52.	Tax, Lien Account	45 76
53.	Water Works Abatements, ...	2,998 37
54.	" " Construction	19,282 68
55.	" " " (Fresh Pond Land)	64,729 80
56.	" " " (Stony Brook Supply)	122,652 42
57.	" " Maintenance	43,447 67
58.	" " Rates, Fines, etc.	1,195 70
59.	" " Supplies	5,943 62
		$2,264,507 88

Abatements, Taxes.

Amount appropriated	$17,000 00
Amount transferred to	500 00
	$17,500 00

EXPENDED.

For Abatement of Taxes, as per item No. 1 of expenses	17,497 00
Balance unexpended.	3 00

Bridges.

Amount appropriated	$2,500 00

EXPENDED.

For Hardware and tools	$15 25	
Labor	1,814 99	
Lumber	593 16	
Repairs	42 10	
Supplies	3 25	
As per item No. 2 of expenses . . .		2,468 75
Balance unexpended . . .		$31 25

Bridges, West Boston, Canal and Prison Point.

Amount appropriated	$11,700 00
Estimated Revenue	300 00
	$12,000 00

RECEIVED.

For Sundries, as per item No. 1 of receipts	$434 30

EXPENDED.

For Advertising	28 24	
Bricks	4 80	
Carting dirt	53 75	
Electric lights	1,186 25	
Fares	4 47	
Filling	48 55	
Fuel	176 20	
Hardware, tools and repairs	82 12	
Labor, as per pay-roll	1,933 00	
Labor, extra cleaning	77 60	
Lumber	918 06	
Paints and oil	12 14	
Printing and stationery	24 01	
Paving	86 52	
Repairs, carpenter work	4,193 13	
" general	94 75	
" iron work	133 31	
" painting	154 54	
Salary, Wm. J. Marvin, Commissioner	500 00	
" Chas. S. Parsons, Clerk	75 00	
" Wm. Jackson, Engineer	200 00	
Sand	2 85	
Supplies	22 76	
Taking account of travel	5 75	
Water	25 85	
Watering roadway	400 00	
As per item No. 3 of expenses		$10,443 65
Balance unexpended		$1,556 35

Cambridge Public Library.

Amount appropriated		$5,850 00
Estimated revenue		2,650 00
		$8,500 00
Less amount transferred from		500 00
		$8,000 00

RECEIVED.

For Catalogue and fines	$148 58	
Dog licenses	2,588 73	
Error in bill	8 20	
As per item No. 2 of receipts		$2,745 51

EXPENDED.

For Books	1,528 38	
Book-case	53 00	
Binding books	458 40	
Catalogue	403 60	
Directory	2 50	
Gas	272 92	
Ice	8 00	
Insurance	231 00	
Librarian and assistants	2,474 23	
Mats	19 89	
Periodicals and papers	209 88	
Picture frames	2 50	
Printing	134 11	
Rent	1,000 00	
Repairs, carpenter work	9 05	
" furniture	3 50	
" gas fixtures	14 02	
Stationery and supplies	55 49	
Water	11 00	
Watering streets	2 00	
As per item No. 4 of expenses		6,893 47
Balance unexpended		$1,106 53

Cambridge Cemetery.

Estimated revenue	$13,000 00
Amount transferred to	1,800 00
	$14,800 00

RECEIVED.

For Burial lots and graves	$7,438 35	
" fees	2,074 25	
Care of lots, &c.	3,810 43	
Foundations, brick graves, &c.	836 93	
Interest on Cemetery Fund	462 00	
Removals	140 84	
Rent of house	199 92	
Sundries	162 60	
As per item No. 3 of receipts	$15,125 32	

EXPENDED.

For Bricks	54 00	
Canvas	24 00	
Car-tickets	20 00	
Carpenter work	135 00	
Commissions, collecting bills	1 74	
Directory	2 50	
Drain pipe	159 33	
Expressage	6 85	
Fuel	43 50	
Hay and grain	63 67	
Hardware, tools and repairs	220 14	
Harness and repairs	7 25	
Horse-shoeing	19 79	
Hose	36 00	
Labor, as per pay-rolls	11,191 32	
Ladders	11 90	
Lumber, lime and cement	129 34	
Manure	411 90	
Marble tablets	170 25	
Printing	55 37	
Amounts carried forward	$12,763 85	$14,800 00

Amount brought forward	$12,763 85	$14,800 00
Paints and oil	18 01	
Plants and grass seed	219 40	
Rent of telephone	53 15	
Salary of Supt. J. K. Farwell	1,300 00	
Salary of Clerk W. W. Pike	50 00	
Stationery and stamps	68 00	
Supplies	15 04	
Stone	36 70	
Teaming	52 00	
Water	112 85	
Water supply and repairs	83 80	
Webbing	7 36	
As per item No. 5 of expenses		14,780 16
Balance unexpended		$19 84

Cambridge Cemetery Extension

Amount appropriated. (Balance unexpended from proceeds of bonds sold in 1885)	$947 81

EXPENDED.

For Labor on Winchester Estate, as per item No. 6 of expense	947 81

Cemetery Fund.

Amount of fund Nov. 30, 1885	$5,250 00

RECEIVED.

For perpetual care of lots in Cambridge Cemetery as per item No. 4 of receipts	$1,275 00
Amount of fund Nov. 30, 1886.	$6,525 00
The amount received this year, together with the amount of the fund Nov. 30, 1885, has been deposited with the City Treasurer, to be invested by the Committee on Finance as Trustees	$6,525 00

City Lands.

RECEIVED.

For cash payments on estates sold, as per item No. 6 of receipts	$7,944 91

City Buildings, (care and repairs).

Amount appropriated	$8,850 00
Estimated revenue	2,150 00
	$11,000 00
Add amount transferred to	300 00
	$11,300 00

RECEIVED.

For Gas used in rented rooms	$ 21 77	
Rent of Armory . . .	800 00	
Rent of City Buildings .	558 34	
Rent of office and shop to Water Works . .	600 00	
As per item No. 5 of receipts . . .		$1,980 11

EXPENDED

City Hall:—		
For Boxes, paper	4 50	
Boxes, tin	5 50	
Carpets and cleaning . .	31 38	
Cleaning	524 47	
Directory	2 50	
Fuel	243 91	
Furniture and repairs . .	314 24	
Gas	353 77	
Gas fixtures	3 52	
Gas governor	75 00	
Hand stamp	6 00	
Hardware and supplies .	73 52	
Ice	59 92	
Janitor	1200 00	
Keys and locks	5 75	
Mats and repairs . . .	65 23	
Amounts carried forward . . .		$2,969 21 $11,300 00

Amounts brought forward . . .		$2,969 21	$11,300 00
Repairs, awnings . . .	13 25		
Carpenter	319 51		
General	52 00		
Heating apparatus . .	304 98		
Mason	15 00		
Painting and glazing .	50 51		
Plumbing	11 99		
Sketch of vault	25 00		
Water	84 50		
		$3,845 95	
Central Square Building:—			
For Fuel	513 45		
Gas	262 52		
Gas fixtures	56 89		
Gas governor	50 00		
Hardware and supplies .	11 40		
Janitor	1.180 00		
Mats	11 35		
Repairs, carpenter . . .	618 60		
General	26 63		
Painting and glazing .	688 08		
" Plumbing . . .	87 31		
Water	210 60	$3,716 83	
Ward 1, Building:—			
For Carpeting and Mats .	$ 21 03		
Fuel	422 90		
Gas	560 50		
Gas piping	28 31		
Gas saving apparatus . .	50 00		
Janitor	1,230 00		
Removing night soil . .	8 00		
Repairs, carpenter . . .	285 90		
General	75 28		
Heating apparatus . .	134 65		
Mason	100 38		
Painting and glazing .	167 62		
Amounts carried forward	$3,084 57	$10,531 99	$11,300 00

Amounts brought forward	$3,084 57		$11,300 00
Plumbing	271 57		
Supplies	42 08		
Water	225 60		
		$3,623 82	
Ward Rooms:—			
For Gas	$22 28		
Water	9 00	$31 28	
As per item No. 8 of expenses			$11,217 88
Balance unexpended			82 12

Discount, Taxes.

Amount appropriated	32,600 00

RECEIVED.

For error in bill as per item No. 7 of receipts	$40 20

EXPENDED.

For discount on taxes as per item No. 9 of expenses	$32,532 57
Balance unexpended	$67 43

Engineering.

Amount appropriated	6,000 00

RECEIVED.

For copy of plan as per item No. 8 of receipts	$1 00

EXPENDED.

For Assistants, services of	$3,840 85	
Carpenter work	1 77	
Directory	2 50	
Hardware, tools and repairs	81 54	
Materials and Supplies	98 36	
Printing	12 00	
Salary of Engineer W. S. Barbour	1,500 00	
Stationery	13 72	
As per item No. 10 of expenses		$5,550 74
Balance unexpended		$449 26

Fire Department.

Amount appropriated	$59,300 00
Estimated revenue	200 00
	$59,500 00

RECEIVED.

For Gas	$ 2 00	
Manure	75 00	
Old material	167 15	
Use of engine	10 00	
As per item No. 9 of receipts	$254 15	

EXPENDED.

For Alarms, (batteries, poles, repairs ringing bells, etc.)	$1,366 64	
Apparatus and repairs	3,105 56	
Bedding and furniture	129 05	
Brooms and brushes	62 92	
Cleaning material	50 46	
Damage to building	3 00	
Enginemen, services of	33,853 62	
Enginemen, (substitutes in vacations and sickness)	801 25	
Expressage	55 52	
Fuel	816 02	
Gas	703 89	
Gas governor	50 00	
Hardware and tools	104 14	
Hay and grain	2,479 96	
Hats and badges	21 75	
Harness and repairs	230 35	
Houses, care and repairs	1,160 11	
Horses	650 00	
Horse hire and men	763 50	
Horse-shoeing	511 47	
Amounts carried forward	$46,919 21	$59,500 00

Amounts brought forward . . .	$46,919 21	$59,500 00
Hose and repairs	671 94	
Hydrants, care of	159 18	
Ice	34 40	
Oil and matches	48 27	
Printing and stationery	38 75	
Rent of shed	90 00	
Refreshments	18 00	
Salary, T. J. Casey, chief engineer	1,500 00	
Salary, assistant engineers . . .	1,020 00	
Salary, clerk	25 00	
Supplies	12 21	
Supplies for chemical engine . .	61 50	
Spelter	184 36	
Tower and raising bell	415 00	
Transportation	24 00	
Veterinary surgeon and medicines	128 24	
Vitriol	269 80	
Washing clothing	317 12	
Washing battery floor	24 00	
Water for houses	165 00	
Water for hydrants, etc.	6,250 00	
As per item No. 11 of expenses		$58,375 98
Balance unexpended,		$1,124 02

Health Department.

Amount appropriated		$3,000 00

EXPENDED.

For Advertising	$ 6 00	
Analyses of water	5 00	
Burying animals	29 25	
Car-tickets	55 00	
Circulars	2 00	
Cow-pox points	7 65	
Directory	2 50	
Disinfectants	50 45	
Amounts carried forward . . .	$157 85	$3,000 00

Amounts brought forward . .	$157 85	$3,000 00
Fare of health officer to Toronto	18 00	
Hand stamp	3 50	
Printing	23 70	
Removing night soil	4 00	
Salary, health officer	1,500 00	
Salary, sanitary inspector . . .	900 00	
Salary, clerk of Board	150 00	
Stationery and stamps	31 65	
As per item No. 12 of expenses		$2,788 70
Balance unexpended,		$211 30

Incidental Expenses.

Estimated revenue	$38,000 00
Additional appropriation (excess of revenue) .	$12,372 61
	$50,372 61
Add amounts transferred to	6,500 00
	$56,872 61
Deduct amounts transferred from	12,600 00
	$44,272 61

RECEIVED.

For damage to flag staff by students	$15 00	
Fees, collector's	939 02	
Fees, city clerk's	1,481 00	
Fees, milk inspector's	226 75	
Fees, sealer's	281 75	
Fees, weigher's (one-half) . . .	34 84	
Licenses, grease	49 00	
Licenses, liquor	46,950 00	
Licenses, pedlers'	25 00	
Rent of city land	112 50	
Sale of old material	1 00	
Amounts carried forward . . .	$50,115 86	$44,272 61

Amounts brought forward . .		$50,115 86	$44,272 61
Sale of old police station . . .		256 75	
As per item No. 10 of receipts . . .		$50,372 61	

EXPENDED.

For Advertising and printing . . .		$675 85	
Assessors, assistants		1,148 00	
Assessors, clerical aid		1,682 00	
Assessors, carriage hire . . .		60 88	
Assessors, transfers of real estate		263 20	
Atlasses of City of Cambridge .		300 00	
Auditor, clerical assistance . . .		67 50	
Banker and Tradesman, for assessors		5 00	
Bells, ringing		162 50	
Binding indexes		3 00	
Births, census of		252 00	
Births and deaths, returns of . .		59 75	
Board walk		27 80	
Car tickets		525 00	
Carriage hire, paymaster and committees		352 50	
Care of clock and repairs . . .		199 14	
Care of fires		40 00	
City Clerk, clerical assistance . .		400 00	
Clerk of Commissioners of Sinking Funds		25 00	
Commissions on sales of Real Estate		10 00	
Copying declarations and records .		10 45	
Counterfeit detector for treasurer		3 00	
Damages awarded to:—			
Bernard Carr . . .	$25 00		
Ellen E. Connell . .	50 00		
John Doyle	100 00		
John Lennon . . .	200 00		
Agnes McFadden . .	150 00		
Amounts carried forward	$525 00	$6,272 57	$44,272 61

Amounts brought forward	$525 00	$6,272 57	$44,272 61
Terrence O'Brien . .	35 00		
Catherine Powers . .	500 00		
John L. Stone . . .	300 00		
		$1,360 00	
Decoration day (each Post $300.00)		900 00	
Deeds, abstracting and recording .		37 25	
Directories		44 50	
Drain for Engine No. 4		259 93	
Drain for city land (cesspool) .		17 41	
Election expenses :—			
Registrars' salaries	$1,600 00		
" clerical aid	12 13		
Precinct officers . .	728 50		
Advertising and printing	146 45		
Binding voting lists .	62 50		
Gas	17 48		
Hardware and supplies	22 75		
Notices and warrants	69 45		
Repairs of voting rooms	193 48		
Ringing bells . . .	12 00		
Tabulating returns .	25 00		
Transportation of returns and boxes .	26 00		
Use of halls . . .	190 00		
Voting lists . . .	559 72		
		$3,665 46	
Executions against the city viz :—			
Elizabeth Corkum .	$200 00		
John Drew	334 47		
Lucinda Hollis . .	2,067 74		
Rindge heirs . . .	35 45		
		2,637 66	
Expense of putting in new boilers at the Cambridge Almshouse .		2,801 07	
Amounts carried forward . .		$17,995 85	$44,272 61

Amounts brought forward . . .	$17,995 85	$44,272 61
Expense of celebrating 25th anniversary of departure of 1st Co. of Volunteers in 1861 . .	1,541 97	
Expense of President's visit, Nov. 8	179 00	
Expense of Board of Aldermen to Providence, R. I.	56 25	
Expense of Wm. S. Barbour, City Engineer, travelling	8 73	
Expense of putting edge stone at Avon Place Home	242 64	
Expressage	52 92	
Flag-staffs and repairs	58 19	
Hay scales, repairs of	7 00	
High school exhibition	50 00	
Horse and buggy (for Superintendent of buildings)	480 00	
Horse-board, shoeing, etc. (for Superintendent of Buildings) . .	238 91	
Invalid tax titles (releases) . .	195 48	
Legal expenses, witness fees, etc.	152 30	
Liquor licenses (one-fourth to State)	11,737 50	
Land in rear of City Hall . . .	2,284 80	
Land, examination of title . . .	30 00	
Massachusetts reports	9 90	
Messenger's assistant	253 00	
Milk Inspector's outfit	130 85	
Newspapers	9 40	
Page of common council	50 00	
Paving at Engine No. 4 House .	12 70	
Painting target	16 51	
Postal cards for treasurer . . .	100 00	
Probation officer	133 34	
Professional services:—		
E. B. Hale, Esq.	200 00	
Geo. F. Piper, Esq.	40 00	
Public statutes	5 70	
Amounts carried forward . .	$36,272 94	$44,272 61

Amounts brought forward . .	$36,272 94	$44,272 61
Refreshments for committees . .	41 20	
Rent of Box in Safety Deposit Vaults	70 00	
Rent of post-office boxes . . .	5 00	
Rent of pound	20 00	
Repairs of City property . . .	103 23	
Reward in Hayes case	500 00	
Serving notices	95 00	
Sealing expenses	87 50	
Shovelling snow	52 50	
Stamps, autograph and hand . .	33 00	
Somerville tax	451 22	
Somerville, re-setting bounds for .	10 68	
Supplies and sundries	26 05	
Tax, poll, collecting	448 50	
Tax and water notices, distribution	270 44	
Telegraph alarm, repairs . . .	22 22	
Telephoning	3 97	
Treasurer's clerical aid	3,421 59	
Vault for City records	1,530 00	
Ward 1 burying ground, supt. .	12 00	
Water and supplies for fountains .	692 85	
Weighing coal	34 94	
As per item No. 13 of expenses . . .		$44,204 83
Balance unexpended . .		$67 78

Interest.

Amount appropriated	$120,500 00
Estimated revenue	1,500 00
	$122,000 00
Deduct amount transferred from	5,000 00
	$117,000 00
Amount carried forward	$117,000 00

Amount brought forward		$117,000 00
RECEIVED.		
For Interest, Taxes, etc., as per item No. 11 of receipts	$3,026 44	
EXPENDED.		
For Interest on Dowse Institute fund .	$600 00	
Danl. White Charity fund . . .	300 00	
Funded loan	100,477 50	
Cemetery fund	462 00	
Sanders Temperance fund . . .	600 00	
Temporary loan	5,653 83	
Note to Trustees of Water loan sinking fund	8,000 00	
As per item No. 14 of expenses . . .		$116,093 33
Balance unexpended . .		$906 67

Interest on Water Loan.

Amount transferred from Water Works, rates, fines, etc.		$99,015 00
RECEIVED.		
For accrued interest on bonds sold as per item No. 12 of receipts . . .	$135 90	
EXPENDED.		
For Interest on Water Loan as per item No. 15 of expenses		$99,015 00

Lighting Streets.

Amount appropriated		$33,500 00
RECEIVED.		
For Damage to lamp-posts, as per item No. 13 of receipts	$59 46	
EXPENDED.		
For Alcohol	$202 50	
Carriage-hire	30 75	
Directory	2 50	
Expressage	14 25	
Amounts carried forward . .	$250 00	$33,500 00

Amounts brought forward . . .	$ 250 00	$33,500 00
Founts, ...	45 08	
Gas	18,958 59	
Gas burners and testing	45 38	
Gas piping and repairs	417 03	
Gas fittings	8 88	
Glass and putty	298 05	
Hardware and tools	18 00	
Ladder	7 00	
Lamps, care of	8,930 89	
Lamps, repairs of	261 40	
Lamp-posts and repairs	1,048 57	
Oil, matches and cans	356 19	
Painting	227 40	
Salary of Superintendent B. F. Nourse	650 00	
Wicks	56 25	
As per item No. 16 of expenses . . .		$31,578 71
Balance unexpended		$1,921 29

Loan (City).

RECEIVED.

From Commissioners of Sinking Funds included in item No. 28 of receipts.	$100,000 00

EXPENDED.

For Matured Bonds, as per item No 17 of expenses	$100,000 00

Loan, (Low Land).

RECEIVED.

From the Commissioners of the Sinking Funds included in item No. 28 of receipts	$60,000 00

EXPENDED.

For Matured Bonds as per item No. 18 of expenses	$60,000 00

Loan (Street Widening).

RECEIVED.

From Commissioners of Sinking Funds included in item No. 28 of receipts	$7,000 00

EXPENDED.

For Matured Bonds, as per item No. 19 of expenses	$7,000 00

Loan (Sewer).

RECEIVED.

From sale of Registered Bond No. 1, dated Nov. 1, 1886, payable in ten years with interest at 3½ per cent per annum as per item No. 14 of receipts	$25,000 00

Loan (Temporary).

RECEIVED.

For City Notes issued during the year as per item No. 15 of receipts	$450,000 00

EXPENDED.

For City Notes due and paid Oct. 11, 12 and 13, as per item No. 20 of expenses	$450,000 00

Loan (Water).

RECEIVED.

From sale of Bonds, as per item No. 16 of receipts	$218,000 00
Amount carried forward	$218,000 00

EXPENDED.

For Matured Bonds, as per item No. 21 of expenses	$100,000 00
Increase	$118,000 00

Pauper Department.

Amount appropriated	$20,400 00
Estimated revenue	4,600 00
	25,000 00
Add amount transferred to	3 74
	$25,003 74
Deduct amount transferred from	1,100 00
	$23,903 74

RECEIVED.

For Aid to and burial of paupers as per item No. 18 of receipts . . .	$4,603 74	

EXPENDED.

For Bags for flour	$8 67	
Amounts carried forward . .	$8 67	$23,903 74

Amounts brought forward . .	$8 67	$23,903 74
Board, ...	14,347 37	
Book covers, ...	14 00	
Boots and shoes	423 86	
Car tickets, fares, etc.	279 04	
Carriage-hire	2 50	
Clothing	14 49	
Directory	7 50	
Flour, beans and meal	624 92	
Fuel	1,149 68	
Gas	55 44	
Grain	11 20	
Groceries	864 34	
Hand-stamps	7 50	
Hardware and supplies	19 85	
Ice	6 00	
Medical aid and medicines . . .	235 71	
Moving furniture	7 00	
Nurse	47 00	
Paupers, aid to	1,976 42	
Paupers, burial of	155 90	
Postage	37 16	
Printing	39 62	
Provisions	91 80	
Rent	508 00	
Rent of telephone and messages .	61 79	
Repairs, general	16 66	
Salary, secretary D. P. Muzzey .	1,300 00	
Salary, visitor V. Danforth . .	1,500 00	
Stationery	40 12	
Washing . . . , ...	3 00	
As per item No. 22 of expenses		$23,856 54
Balance unexpended . .		$47 20

Pauper Department (Almshouse).

Amount appropriated	$14,500 00
Amount carried forward.	$14,500 00

Amount brought forward	$14,500 00
Estimated revenue	7,000 00
	$21,500 00
Additional appropriation (excess of revenue) . .	354 70
	$21,854 70
Add amount transferred to	2,100 00
	$23,954 70

RECEIVED.

For Aid, board and care of paupers .	$613 93	
Cows	235 00	
Empty barrels . . . , . . .	41 20	
Errors in bills	3 77	
Farm products	534 12	
Grease and bones	83 89	
Junk and rags	10 76	
Old stove	5 00	
Pork	103 02	
Proceeds of chair shop	37 5	
Stone	5,611 38	
Wagon	75 00	
Weighing fees	13	
As per item No 19 of receipts . . .	$7,354 70	

EXPENDED.

For Advertising	12 00	
Beef and mutton	1,853 95	
Boots and shoes	287 20	
Blinds	13 06	
Butter	801 84	
Bricks	3 25	
Brooms	19 35	
Burials	22 00	
Chaplain	100 00	
Amounts carried forward . .	$3,112 65	$23,954 70

Amounts brought forward . .	$3,112 65	$23,954 70
Carriage repairs	134 21	
Carriage hire	26 00	
Clocks, spectacles and repairs . .	17 90	
Cows	270 00	
Commission, buying and selling cows	8 00	
Crockery ware	114 78	
Cottage for Hospital	1,220 00	
Clothing	550 91	
Cash for fares and sundries . . .	116 54	
Directory	2 50	
Dry goods	867 42	
Expressage	13 90	
Flour, beans and meal	963 79	
Fish	404 04	
Fuel	1,740 78	
Furniture and carpet	131 89	
Gas	175 07	
Groceries	1,340 85	
Hay and grain	312 50	
Hardware, supplies and repairs .	750 61	
Hats and caps	29 76	
Harness and repairs	108 05	
Hospital supplies	16 27	
Horse	150 00	
Horse hire	12 00	
Hose	3 10	
Ice	43 09	
Insect powder	28 95	
Instruction in rattan work . . .	15 00	
Lumber, lime and cement . . .	167 69	
Labor on ledge and farm . . .	2,540 88	
Labor of house officials	3,450 90	
Mattress repairs	12 50	
Meat chopper	6 75	
Medicines and drugs	251 66	
Newspapers	20 50	
Amounts carried forward . .	$19,131 44	$23,954 70

Amounts brought forward . .	$19,131 44	$23,954 70
Organist	100 00	
Oil	20 96	
Phosphate	49 68	
Provisions	1,479 57	
Pigs	17 50	
Plants	13 95	
Powder	277 60	
Rattan	48 93	
Repairs, heating apparatus . . .	171 78	
Repairs, whitewashing	27 13	
Repairs, plumbing	60 07	
Rent of telephone and messages .	52 90	
Seeds	81 37	
Sealing weights and measures . .	1 21	
Soap	220 00	
Salt	17 45	
School supplies	17 38	
Stationery and postage	41 40	
Shoe findings	89 28	
Sewing machine repairs	19 65	
Toys	6 55	
Warden, salary of M. L. Eldridge	1,183 33	
Water	475 20	
Wagon repair	59 58	
Wooden ware	26 90	
Yeast	27 67	
As per item of expenses No. 23		$23,718 48
Balance unexpended		$236 22

Pauper Department (House Offal).

Amount appropriated	8,000 00
Estimated revenue	7,000 00
	$15,000 00

RECEIVED.

For house offal	$6,926 23	
Amounts carried forward . .	$6,926 23	$15,000 00

Amounts brought forward . .	$6,926 23	$15,000 00
Old horse	25 00	
As per item No. 20 of receipts . .	$6,951 23	
EXPENDED.		
For Barn repairs	27 50	
Drain repairs	22 95	
Harness and repairs	80 90	
Horses	350 00	
Horse shoeing	276 87	
Hay, grain, straw, etc.	1,554 47	
Hardware, tools and repairs . .	103 40	
Labor as per pay-rolls	12,196 37	
Lumber, etc.	126 81	
Paints and oil	8 00	
Supplies	28 96	
Wagon and repairs	132 36	
Veterinary Surgeon and medicine	23 25	
As per item No. 24 of expenses		$14,931 84
Balance unexpended		$68 16

Police Department.

Amount appropriated		$74,000 00
Estimated revenue		6,000 00
		$80,000 00
Amount transferred to, (from revenue) . . .		467 25
		$80,467 25
RECEIVED.		
For court fees and fines	$5,704 15	
Old material	20 00	
Return of costs	71 75	
Services of officers at J. P. Squire's	467 25	
Transportation of prisoners . .	22 85	
Use of ropes and stakes	6 00	
As per item No. 21 of receipts . .	$6,292 00	
Amount carried forward		$80,467 25

EXPENDED.

	Amount brought forward . . .		$80,467 25
For	Belts	$133 00	
	Billies	20 70	
	Buttons, badges, etc.	31 75	
	Clubs	46 20	
	Clerical assistance	22 50	
	Cleaning stations	139 46	
	Clock repairs . . . , . . .	1 25	
	Court expenses	2 90	
	Directories	12 50	
	Expressage	3 32	
	Food for prisoners	82 14	
	Furniture and repairs	166 57	
	Gas	436 61	
	Gas shades	2 50	
	Hardware, tools and repairs . .	71 42	
	Harness repairs	10 35	
	Hotel blue book	1 50	
	Horses, board and shoeing . . .	646 37	
	Ice	38 75	
	Keys	2 25	
	Lumber	59 63	
	Medical attendance	60 00	
	Medicines	8 28	
	Policemen, salaries	76,057 95	
	Printing	23 00	
	Photographs	45 95	
	Repairs, carpenter	130 98	
	Repairs, heating apparatus . . .	4 25	
	Repairs, painting and glazing . .	35 00	
	Repairs, plumbing	68 73	
	Repairs, whitewashing	45 75	
	Salary of Chief, L. J. Cloyes . .	1,600 00	
	Stationery and supplies	107 93	
	Telegrams	9 70	
	Telephone rent	100 00	
	Travelling expenses	58 52	
	Amounts carried forward . .	$80,287 71	$80,467 25

Amounts brought forward . .	$80,287 71	$80,467 25
Washing	11 25	
Wagon repairs	52 48	
Water	41 00	
Use of barge	12 00	
As per item No. 25 of expenses		$80,404 44
Balance unexpended		$62 81

Salaries.

Amount appropriated		$26,600 00
EXPENDED.		
Paid Wm. E. Russell, mayor	$2,500 00	
Wm. W. Dallinger, city treasurer	3,000 00	
Wm. W. Dallinger, treas. of sinking funds	300 00	
Justin A. Jacobs, city clerk . .	3,000 00	
Walter W. Pike, assistant city clerk	1,200 00	
Walter W. Pike, clerk of common council	291 67	
Franklin Perrin, auditor . . .	532 26	
Harry T. Upham, auditor . . .	1,267 74	
Joshua G. Gooch, assessor . . .	1,500 00	
A. Z. Brown, assessor	125 00	
Jas. Whittemore, assessor . . .	1,375 00	
A. J. Green, assessor	1,500 00	
J. W. Hammond, city solicitor .	564 53	
Chas. J. McIntire, city solicitor .	1,435 47	
John McDuffee, clerk of committees	2,000 00	
F. L. Pratt, city messenger . . .	1,500 00	
B. F. Nourse, sealer of weights and measures	350 00	
F. A. Dunbar, milk inspector . .	425 00	
F. A. Dunbar, vinegar inspector .	151 48	
J. H. Farrell, vinegar inspector .	23 52	
L. L. Bryant, assistant city physician	1,250 00	
Amounts carried forward . . .	$24,291 67	$26,600 00

Amounts brought forward . . .	$24,291 67	$26,600 00
Fred W. Hagar, probation officer	666 66	
Benj. H. Steele, supt. of buildings	1,369 80	
Wm. J. Marvin, harbor master .	91 66	
As per item No. 26 of expenses		$26,419 79
Balance unexpended		$180 21

School Department (Drawing Schools).

Amount appropriated		$975 00
EXPENDED.		
For Teachers' salaries	$902 00	
Janitor	61 00	
Repairs and supplies	8 10	
As per item No. 27 of expenses . . .		971 10
Balance unexpended		$3 90

School Department (Evening Schools).

Amount appropriated			$1,450 00
EXPENDED.			
For Teachers' salaries:			
Ward 2	$584 00		
Ward 3	282 50		
Ward 4	193 50		
Ward 5	102 00		
		$1,162 00	
Care of rooms		148 50	
Posters		3 15	
Furniture		12 25	
As per item No. 28 of expenses . . .			$1,325 90
Balance unexpended			$124 10

School Department (Incidental Expenses).

Amount appropriated		$650 00
EXPENDED.		
For Car-tickets	$95 00	
Collecting statistics	6 00	
Printing and advertising . . .	194 62	
Page to school committee . . .	25 00	
Secretary	300 00	
Superintendent, travelling expenses	25 32	
		$645 94
Balance unexpended . .		$4 06

School Department (Salaries).

Amount appropriated.		$164,000 00
Estimated revenue		1,000 00
		$165,000 00
Amount transferred to		300 00
		$165,300 00
RECEIVED.		
From Hopkins Fund income	$668 63	
Tuition of non-resident pupils . .	305 00	
As per item No. 22 of receipts . . .	$973 63	
EXPENDED.		
For salaries of		
Superintendent of schools . . .	$ 2,800 00	
Agent	1,200 00	
Teachers	158,577 42	
Truant officers	2,700 00	
As per item No. 30 of expenses . . .		$165,277 42
Balance unexpended . .		$22 58

School Department (Text-Books and Supplies).

Amount appropriated		$13,000 00
Less amount transferred from		300 00
		$12,700 00

RECEIPTS.

For sale of and damage to books as per item No. 23 of receipts	$269 73	

EXPENDED.

For Book covers	$291 15	
Binding books	88 26	
Carting and expressage	128 58	
Car-tickets	25 00	
Cyclostyles	67 75	
Directories	5 00	
Ink-wells	35 20	
Diplomas	102 23	
Maps, charts and globes	88 70	
Pointers	5 00	
Repairs on piano	3 00	
Printing	320 00	
Ruling paper	33 75	
Shades	16 00	
Slates	27 25	
Stationery and supplies	2,682 97	
Text-books	6,745 68	
Thermometers.	15 00	
As per item No. 31 of expenses		$10,680 52
Balance unexpended		2,019 48

School Houses (Care and Repairs).

Amount appropriated	$34,000 00
Less amount transferred from	1,300 00
	$32,700 00
Amount carried forward	$32,700 00

Amount brought forward . . .			$32,700 00
RECEIVED.			
For sale of old material		$8 67	
Error in bill		5 70	
As per item No. 24 of receipts . . .		$14 37	
EXPENDED.			
For Blackboards		$934 64	
Brushes, dusters, etc.		275 91	
Carriage hire for committee . .		21 00	
Carpets, cleaning		65 84	
Carting furniture		34 25	
Cleaning, extra		28 00	
Clocks and repairs		64 35	
Desks		419 41	
Disinfectants		22 75	
Drain repairs		13 00	
Expressage		3 45	
Fuel		6,878 99	
Furniture and repairs		287 11	
Gas		276 04	
Gas fixtures		45 50	
Gong bell repairs		16 00	
Grading		24 00	
Hareware, tools and repairs . .		596 91	
Hose		31 50	
Janitors		11,865 33	
Keys and locks		9 40	
Lumber		129 09	
Mats and repairs		329 14	
Platform		6 00	
Repairs: —			
Carpenter work .	$1,954 73		
Heating apparatus .	1,997 91		
Mason work	637 86		
Painting and glazing .	896 40		
Plastering and white-washing	591 08		
Amounts carried forward	$6,077 98	$22,377 61	$32,700 00

Amounts brought forward	$6,077 98	$22,377 61	$32,700 00
Repairs, Plumbing	806 82		
Roofing	222 19		
General	333 64		
		7,440 63	
Removing night soil		168 00	
Shades and shade fixtures		106 00	
Supplies		78 99	
Teaming		55 90	
Water		704 45	
Water fixtures		1 00	
As per item No. 32 of expenses			$30,932 58
Balance unexpended			$1,767 42

School Houses, (New, and Furniture, High School).

Amount appropriated	$9,400 00
Add amount transferred to	300 00
	$9,700 00

EXPENDED.

For alterations in building as per contract with John Quin	$6,000 00	
Extra work	500 66	
Fuel	49 17	
Furniture, desks etc.	435 49	
Furnace	487 00	
Gas fixtures	24 65	
Electric bells	128 74	
Painting	9 00	
Plumbing	1,518 90	
Mason work	98 24	
Mats	20 90	
Shades	50 23	
Services of architect	300 00	
Ventilators	55 20	
As per item No. 23 of expenses		$9,678 18
		$21 82

School Houses, (New, and Furniture, Webster School).

Amount appropriated		$9,000 00
Add amount transferred to		125 00
		$9,125 00

EXPENDED.

For Bells, electric	$167 20	
Contract with Wm. W. Tobey for enlargement	5,060 00	
Extra work	296 23	
Clocks	30 00	
Desks, etc.	742 00	
Furniture	61 12	
Furnaces	947 92	
Gas-piping	13 90	
Hardware	9 00	
Mason work	34 50	
Plastering,	8 50	
Plumbing	1,178 14	
Plans and oversight	400 00	
Painting sign	3 50	
Shades	90 00	
Stone	44 50	
Water fixtures	27 42	
As per item No. 35 of expenses		$9,113 93
		$11 07

School Houses (New, and Furniture Ward II).

Amount appropriated		$10,000 00
Add amount transferred to		4,000 00
		$14,000 00
Deduct amount transferred from		175 00
		$13,825 00

EXPENDED.

For Advertising for proposals	$3 75	
Architect	401 59	
Amounts carried forward	$405 34	$13,825 00

Amounts brought forward . . .	$405 34	$13,825 00
Ashes	61 75	
Bell	6 50	
Blackboards	73 25	
Carting	9 75	
Clocks	20 00	
Contract for building	10,300 00	
Carpenter work, extra	88 13	
Copper pipe	200 00	
Extra cleaning	2 00	
Furniture, desks, etc.	495 55	
Furnace and ventilators	990 00	
Grading	238 00	
Mats	21 65	
Shades	52 00	
As per item No. 34 of expenses		$12,963 92
Balance unexpended		$861 08

School Houses, (New, and Furniture, Wyman.)

Amount appropriated		$4,000 00
Add amount transferred to		50 00
		$4,050 00

EXPENDED.

For Architect	$82 00	
Blackboards	38 35	
Contract for enlargement . . .	3,325 00	
Carpenter work, extra	37 54	
Clocks	8 00	
Furniture, desks, etc.	138 23	
Furnaces	210 00	
Plumbing	13 53	
Shades	24 00	
As per item No. 36 of expenses		$3,876 65
Balance unexpended		$173 35

Sewers (Construction).

Amount appropriated		$10,000 00
Estimated revenue		12,000 00
		$22,000 00

RECEIVED.

For Assessments as per item No. 25 of receipts	$8,372 52	

EXPENDED.

For Bricks	$2,512 96	
Cordage	120 74	
Carpenter work	193 85	
Castings	462 88	
Cement	597 75	
Drain pipe	3,262 28	
Execution of court	431 85	
Fuel	66 95	
Grain	24 63	
Hardware, tools and repairs	200 83	
Hose and couplings	31 63	
Labor, as per pay-rolls	11,143 25	
Lumber	338 96	
Piles	510 05	
Sand and gravel	311 37	
Stone	228 60	
Supplies,	23 21	
Teaming	872 35	
As per item No. 37 of expenses		$21,334 14
Balance unexpended		665 86

Sewers (Construction, Belmont).

Amount appropriated		$25,000 00
Add amount of revenue		322 50
		$25,322 50

RECEIVED.

For Premium on bonds sold, as per item No. 26 of receipts	$322 50	
Amount carried forward		$25,322 50

Amount brought forward . .		$25,322 50
EXPENDED.		
For Bricks	$1,587 52	
Carpenter work	247 39	
Cement	303 75	
Cotton sails	107 10	
Expressage	2 55	
Fuel	86 58	
Hardware, tools, etc.	206 31	
Hose and couplings	35 05	
Labor, as per pay-rolls	3,963 62	
Lumber	828 04	
Pipe	90 04	
Rubber goods	109 50	
Sand	55 00	
Straw	4 10	
Teaming	398 75	
Tubs, earth	98 14	
Use of engine and pumps . . .	307 50	
As per item No. 38 of expenses		$8,430 94
Balance unexpended		$16,891 56

Sewers, (Maintenance).

Amount appropriated	$19,325 00
Estimated revenue	1,675 00
	$21,000 00
Add amount transferred to	2,000 00
	$23,000 00

RECEIVED.		
For Cesspool	$17 41	
City of Somerville, for dredging Bridge Street sewer ($\frac{5}{9}$ expense)	1,402 39	
Error in bill	8 94	
Manure	3 00	
Repairs	277 07	
Amounts carried forward . .	$1,708 81	$23,000 00

Amounts brought forward . . .	$1,708 81	$23,000 00
Sale of old material	36 90	
Stone and brick	2 00	
As per item No. 27 of receipts . . .	$1,747 71	

EXPENDED.

For Bricks	$1,392 48	
Carpenter work	178 01	
Carriage and horse hire.	47 22	
Castings	264 54	
Cleaning catch-basins	731 37	
Drain pipe	2,160 58	
Dredging Bridge St. sewer . .	2,214 00	
Expressage	3 68	
Fuel	50 70	
Hardware, tools and repairs . .	239 43	
Harness and repairs	91 02	
Hay and grain	246 23	
Horse	175 00	
Horse shoeing, etc.	79 50	
Hose and couplings	47 88	
Labor, as per pay-rolls	12,507 71	
Lanterns	37 10	
Lumber and cement	907 09	
Oil and rubber goods	60 08	
Paving	91 10	
Piles	66 24	
Painting	54 50	
Repairing drains	13 50	
Sand, stone and gravel	293 25	
Supplies	9 88	
Teaming	796 75	
Veterinary surgeon	15 00	
Wagon repairs	71 18	
Water supply	126 98	
As per item No. 39 of expenses		$22,972 00
Balance unexpended		$28 00

Shade-Trees and Public Grounds

Amount appropriated	$4,500 00

EXPENDED.

For Hardware and tools	$59 19	
Hose	21 00	
Labor, as per pay-rolls	3,866 76	
Lumber	52 62	
Manure	325 00	
Plants	74 50	
Rolling grass	17 50	
Rope	3 48	
Water	30 00	
As per item No. 40 of expenses		$4,450 05
Balance unexpended		$49 95

Sinking Funds (Commissioners of).

Amount of funds, Nov. 30, 1885		$542,954 20

RECEIVED.

From City Treasurer, amount appropriated by City Council, to be derived from taxation	$63,055 00	
Interest and premiums, accumulations to Nov. 30, 1886	28,172 92	
		91,227 92
		$634,182 12

EXPENDED.

Cambridge bonds maturing July 1, 1886, viz.: —		
For City Loan	$100,000 00	
Low Land Loan	60,000 00	
Street Widening Loan	7,000 00	
		167,000 00
Amount of funds, Nov. 30, 1886		$467,182 12

Sinking Fund of Water Works (Trustees of).

Amount of fund, Nov. 30, 1885		$874,373 38
RECEIVED.		
For Amount due from revenue of Water Works, rates, fines, etc.	$57,675 00	
Interest and premiums accumulations	46,368 25	
Surplus receipts of Water Works for 1886	13,589 34	
		117,632 59
		$992,005 97
EXPENDED.		
For Water Bonds maturing July 2, 1886		$100,000 00
Amount of fund Nov. 30, 1886		$892,005 97

State Aid.

Amount appropriated		$2,550 00
Estimated revenue		10,600 00
		$13,150 00
RECEIVED.		
From Commonwealth of Massachusetts	$8,980 25	
Other cities, re-imbursements	1,388 50	
As per item No. 30 of receipts	$10,368 75	
EXPENDED.		
For Military aid	$9,250 00	
Indigent aid	3,405 00	
Clerical assistance	350 00	
Aid to Carl Meyer of Chicopee	132 00	
As per item No. 43 of expenses		$13,137 00
Balance unexpended		$13 00

Stationery and Printing.

Amount appropriated		$3,200 00
EXPENDED.		
For Stationery	$1,304 48	
Printing	1,890 37	
As per item No. 44 of expenses		$3,194 85
Balance unexpended		$5 15

Street Department (Paving).

Amount appropriated		$23,870 92
Estimated revenue		3,000 00
		$26,870 92
Amount transferred to		3,000 00
		$29,870 92
RECEIVED.		
For Bricks	$11 52	
Driveways	148 46	
Edge-stones	287 02	
Paving blocks	240 90	
Labor	273 07	
Sidewalk assessments	524 47	
Stone	45 93	
As per item No. 31 of receipts	$1,531 37	
EXPENDED.		
For Advertising	$71 05	
Bricks, sand and cement	658 08	
Castings	15 25	
Edge stones	1,227 36	
Granite blocks	12,647 72	
Gravel	1,218 28	
Labor, as per pay-rolls	12,201 98	
Oil	12 88	
Rent of wharf	432 00	
Supplies	2 23	
Amounts carried forward	$28,486 83	$29,870 92

Amounts brought forward . . .	$28,486 83	$29,870 92
Teaming	13 25	
Tools	20 86	
As per item No. 45 of expenses		$28,520 94
Balance unexpended		$1,349 98

Street Department, (Repairs).

Amount appropriated	$83,200 00
Estimated revenue	1,800 00
	$85,000 00

RECEIVED.

For Ashes	$558 30	
Chopping blocks	24 59	
Edge-stones	12 69	
Gravel	52 95	
Grading	230 98	
Old horse	18 00	
Old plank	4 00	
Manure	352 50	
Sand	8 50	
Scrapings	575 38	
Sign-posts	8 00	
Stone and screenings	409 25	
Teaming	5 50	
As per item No. 32 of receipts . . .	$2,260 64	

EXPENDED.

For Advertising	$3 70	
Carriage-hire	25 00	
Castings	10 80	
Carpenter work	36 54	
Directory	2 50	
Fencing gravel pit	65 00	
Fuel	204 21	
Gravel	64 87	
Gas	216 49	
Amounts carried forward . . .	$629 11	$85,000 00

Amounts brought forward . . .	$629 11	$85,000 00
Gas-fitting	7 19	
Grease	31 00	
Hardware, tools and repairs . .	366 95	
Horses	1,140 50	
Hose	6 65	
Hitch-posts	9 00	
Hay and grain	5,302 18	
Harnesses and repairs	707 63	
Iron and steel	409 27	
Iron work	8 48	
Labor, as per pay-rolls: —		
Regular men . $36,557 10		
Transient men 14,887 91	51,445 01	
Lanterns	8 00	
Lumber	876 65	
Mason work	28 25	
Paints and oil	42 11	
Packing	12 05	
Picture frames	9 75	
Plastering	15 24	
Plumbing	16 72	
Printing	22 50	
Pung	44 00	
Repairing boiler	7 80	
Repairing building	7 52	
Repairing drain	51 04	
Repairing fence	12 86	
Repairing plows	22 00	
Salt	8 75	
Sand	8 25	
Scale house, on contract	798 80	
Scales	125 00	
Sheds, on contract	750 00	
Stone	3,829 66	
Stove-work	18 92	
Street signs	219 00	
Amounts carried forward . . .	$66,997 84	$85,000 00

Amounts brought forward . .	$66,997 84	$85,000 00
Superintendent, salary	1,700 00	
Supplies	74 48	
Sweeping machine	188 25	
Teaming and rolling streets . .	14,570 38	
Telephone rent	20 00	
Time books	14 75	
Veterinary surgeon and medicines	154 50	
Water for stable	67 00	
Water for rolling streets . . .	69 12	
Wagons and repairs	398 70	
Windows	11 40	
As per item No. 46 of expenses		$84,266 42
Balance unexpended		$733 58

Street Department (Watering).

Amount appropriated	$10,500 00
Estimated revenue	10,500 00
	$21,000 00
Add excess of revenue	602 48
	$21,602 48

RECEIVED.

For watering streets, as per item No. 33 of receipts	$11,102 48

EXPENDED.

For carpenter work	$10 50	
Carts, repairs of	11 42	
Castings	13 80	
Cordage	6 24	
Hardware	40 58	
Hose	17 00	
Iron	42 41	
Labor, watering streets	14,386 89	
Labor, on repairs	1,266 86	
Amounts carried forward . . .	$15,795 70	$21,602 48

Amounts brought forward . .	$15,795 70	$21,602 48
Leather	27 15	
Lumber	110 78	
Packing	15 00	
Paints and oil	76 95	
Sprinklers and repairs	302 92	
Stand-pipe repairs	62 63	
Supplies	4 40	
Tanks	576 09	
Water	4,605 86	
As per item No. 47 of expenses		$21,577 48
Balance unexpended		$25 00

Street Department (Widening and Extension).

Amount appropriated	$2,000 00

EXPENDED.

For Land on Ninth Street, execution of court, as per item No. 48 of expenses	$1,966 25
Balance unexpended	$33 75

Surrendered Estates (Sale Account).

RECEIVED.

From sales of estates, as per item No. 34 of receipts	$7,424 39

Tax (Corporation).

RECEIVED.

From the Commonwealth of Massachusetts for the year 1886, as per item No. 35 of receipts . . .	$47,006 25

Tax (National Bank).

RECEIVED.

From the Commonwealth of Massachusetts for the year 1886, as per item No 36 of receipts . . .	$16,618 01

EXPENDED.

For amount paid the Commonwealth of Massachusetts for the year 1886, as per item No. 50 of expenses	$6,079 27
	$10,538 74

Tax (County).

Amount paid the County of Middlesex, for the year 1886, as per item No. 49 of expenses	$28,101 71

Tax (State).

Amount paid the Commonwealth of Massachusetts, for the year 1886, as per item No. 51 of expenses	$46,740 00

Tax Lien Account.

Paid Nov. 30, 1885	$17,610 87
EXPENDED.	
For tax titles, as per item No. 52 of expense . .	$45 76
Total Nov. 30, 1886	$17,656 63

Taxes of 1880.

Amount uncollected Nov. 30, 1885	7,603 28
RECEIVED.	
From sundry persons, as per item No. 37 of receipts	4 00
Balance uncollected, Nov. 30, 1886 . . .	$7,599 28

Taxes of 1881.

Amount uncollected, Nov. 30, 1885	$9,317 09
RECEIVED.	
From sundry persons, as per item No. 38 of receipts	18 00
Balance uncollected, Nov. 30, 1886 . . .	$9,299 09

Taxes of 1882.

Amount uncollected, Nov. 30, 1885	$7,803 22
RECEIVED.	
From sundry persons, as per item No. 39 of receipts	76 98
Balance uncollected, Nov. 30, 1886 . . .	$7,726 24

Taxes of 1883.

Amount uncollected, Nov. 30, 1885	$9,163 25
RECEIVED.	
From sundry persons, as per item No. 40 of receipts	124 92
Balance unexpended, Nov. 30, 1886 . . .	$9,038 33

Taxes of 1884.

Amount uncollected Nov 30, 1885.	$10,453 02
From sundry persons, as per item No. 41 of receipts	1,220 68
Balance uncollected Nov. 30, 1886. . . .	$9,232 34

Taxes of 1885.

Amount uncollected Nov. 30, 1885	$64,335 30
Amount of assessors' supplemental warrant . . .	100 75
	$64,436 05

RECEIVED.

From sundry persons, as per item No. 42 of receipts	$50,731 65
Balance uncollected Nov. 30, 1886 . . .	$13,704 40

Taxes of 1886.

Amount of assessors' original warrant	$929,461 50
Amount of assessors' supplemental warrant . .	767 00
	$930,228 50

RECEIVED.

From sundry persons, as per item No. 43 of receipts	$855,731 00
Balance uncollected Nov. 30, 1886 . . .	74,497 50

Water Works (Construction).

Appropriation	$18,000 00
Add amount transferred to	1,282 68
	$19,282 68

RECEIVED.

For premiums on bonds sold	$232 20	
Error in bill	1 50	
As per item No 44 of receipts . . .	$233 70	

EXPENDED.

For Boilers	$1,663 32	
Bolts	4 50	
Amounts carried forward . . .	$1,667 82	$19,282 68

Amounts brought forward . . .	$1,667 82	$19,282 68
Carpenter work	316 72	
Castings	168 69	
Establishing lines at Fresh Pond	16 00	
Execution of court	1,275 27	
Felting	164 60	
Gauges	88 00	
Granite posts	11 25	
Hydrants	759 50	
Iron work	205 41	
Labor, as per pay-rolls	4,176 50	
Lead	813 12	
Mason work	685 30	
Meters	2,806 52	
Packing	39 91	
Paving	347 00	
Pipe	3,736 65	
Pipe-fittings	295 59	
Teaming	486 35	
Valves	259 72	
Water-gates and boxes	959 56	
Wharfage	3 20	
As per item No. 54 of expenses		$19,282 68

Water Works (Construction, Fresh Pond Land).

Amount appropriated	$90,000 00
Add amount of revenue	2,750 00
	$92,750 00

RECEIVED.

From sale of old material, as per item No. 45 of receipts	$2,750 00	

EXPENDED.

For Court expenses	32 50	
Carriage hire.	32 00	
Examination of titles	350 00	
Granite posts	16 50	
Land around the Pond	64,275 80	
Amounts carried forward . . .	$64,706 80	$92,750 00

Amounts brought forward	$64,706 80	$92,750 00
Refreshments	23 00	
As per item No. 55 of expenses		$64,729 80
Balance unexpended		$28,020 20

Water Works (Construction, Stony Brook).

ADDITIONAL WATER SUPPLY.

Amount unexpended from last year		$15,443 63
Appropriation		200,000 00
Add amount of revenue		401 25
		$215,844 88

RECEIVED.

From sale of wood	$78 75	
Premium on bonds sold	322 50	
As per item No. 46 of receipts	$401 25	

EXPENDED.

For Building dam, H. H. Pike and Son	$78,425 68	
Extra labor and laying pipe	1,325 15	
Carpenter work	35 30	
Car-fares	202 33	
Carriage hire	210 00	
Certified copies	9 10	
Driving piles	240 00	
Expert and inspector	284 00	
Freight, Fitchburg R. R	393 15	
Fuel	1,305 07	
Gate chamber at Fresh Pond	1,380 00	
Grates	13 37	
Grading pipe line, J. J. and T. F. Maney	1,221 25	
Gravel	27 50	
Hardware, tools and repairs	37 87	
Iron beams	112 19	
Labor, as per pay-roll (Engineers)	9,330 26	
Labor, as per pay-roll (Laborers)	13,662 36	
Amounts carried forward	$108,214 58	$215,844 88

Amounts brought forward . .	$108,214 58	$215,844 88
Lumber	111 51	
Making roads and setting boundaries	131 50	
Meter	34 90	
Medical attendance to injured man	14 25	
Paving	32 50	
Plumbing	11 84	
Policeman, special	852 48	
Photographs	28 97	
Professional services, Henry J. Wells, Esq.	100 00	
Repairing boots	12 79	
Repairing concrete walk	16 80	
Repairing drains	78 57	
Repairing fences	68 20	
Repairing pump	11 10	
Refreshments	201 80	
Right of way	100 00	
Salary, Wm. S. Barbour, City Engineer	1,500 00	
Set of gates	497 45	
Stone and screenings	1,290 02	
Supplies	64 95	
Teaming	7,315 00	
Telegrams	7 02	
Use of machine	565 00	
Valve springs	11 99	
Water	193 25	
Washing	1 45	
Working pump	1,184 50	
As per item No. 56 of expenses		$122,652 42
Balance unexpended		$93,192 46

Water Works (Maintenance).

Appropriation	$30,000 00
Amount carried forward	$30,000 00

Amount brought forward . .		$30,000 00
Add surplus receipts of water accounts		13,589 34
		$43,589 34

EXPENDED.

For Analysis of water	$30 00	
Boilers	1,410 00	
Binding dictionary	1 00	
Blankets	23 50	
Belting and repairs	9 60	
Boots, repairs of	5 00	
Carpenter work	726 71	
Car-tickets and fares	195 50	
Carriage hire	93 00	
Cocks, couplings, fittings and repairs	221 06	
Commission on sale of building .	11 00	
Directories	9 50	
Drain, work	158 52	
Expressage	79 71	
Filling	118 00	
Frost jackets	42 50	
Fuel	4,019 05	
Gas	101 48	
Gas-fittings	12 15	
Gate boxes	102 50	
Hose and repairs	20 00	
Hardware, tools and repairs . .	754 64	
Harness repairs	18 70	
Horse	100 00	
Horse-shoeing	118 22	
Horse medicines	2 30	
Hay and grain	469 14	
Lumber	35 15	
Labor, as per pay-roll	10,798 44	
Meter, repairs	45 61	
Mason, work	728 46	
Newspapers	6 50	
Amounts carried forward . .	$20,466 94	$43,589 34

Amounts brought forward . . .	$20,466 94	$43,589 34
Oil	115 85	
Packing	59 89	
Painting and glazing	135 52	
Plumbing	92 06	
Pipe	63 41	
Pung	40 00	
Rent of office and shop	600 00	
Rent of telephone	30 00	
Rent of wharf	50 00	
Repairing engine	4 35	
Repairing furniture	1 50	
Repairing hydrant	9 05	
Repairing wagons	162 25	
Salary of superintendent . . .	2,000 00	
Salary of registrar	1,800 00	
Salary of engineer	1,500 00	
Salary of foreman	1,140 00	
Salary of office clerk	467 00	
Salary of clerk of board	200 00	
Stationery and printing	299 90	
Supplies	60 01	
Sealing scales	1 12	
Service boxes	140 00	
Teaming	333 25	
Telegrams	1 26	
Work on pipes	84 97	
Surplus receipts paid to Sinking Fund of Water Works . . .	13,589 34	
As per item No. 57 of expenses		$43,447 67
Balance unexpended		141 67

Water Works, (Rates, Fines, Etc).

RECEIVED.

For Rates, fines, etc. as per item No. 47 of receipts	$204,002 46
Amount carried forward . . .	$204,002 46

Amount brought forward . . .		$204,002 46
Deduct amount carried to abatement account	$2,998 37	
Deduct amount carried to interest account	99,015 00	
Deduct amount carried to Sinking Fund account	57,675 00	
Deduct amount carried to Maintenance account	42,069 41	
Deduct amount carried to Construction account	1,048 98	$202,806 76
		$1,195 70

EXPENDED.

For Water rates refunded as per item No. 58 of expenses	$1,195 70

Water Works (Supplies).

RECEIVED.

For Supply pipes and fittings as per item No. 48 of receipts	$7,294 37
Deduct amount carried to Maintenance account .	1,350 75
	$5,943 62

EXPENDED.

For Labor, as per pay-rolls	$2,835 67	
Pipe, fittings, etc.	3,107 95	
As per item No. 59 of expenses		$5,943 62

Cambridge Water Works in account with the City of Cambridge for the year ending Nov. 30, 1886.

RECEIPTS AND EXPENDITURES.

Balance in the City Treasury to the credit of the Stony Brook account, Nov. 30, 1885..	$15,443 63	Balance due the City Treasury on the General Construction account, Nov. 30, 1885....	$108 39
RECEIVED.		EXPENDED.	
From sale of bonds (Stony Brook account).....	125,322 50	For Stony Brook, additional water supply..	122,652 42
From sale of wood (Stony Brook account).....	78 75	*Balance unexpended.....$18,192 46	
From sale of bonds (Fresh Pond Land account)..	75,000 00	For Fresh Pond land and expenses.....	64,729 80
From sale of old materials (Fresh Pond Land account).....	2,750 00	†Balance unexpended..... 13,020 20	
From sale of bonds (General Construction acc't)	18,232 20	For abatements	2,998 37
From error in bill (General Construction acc't)	1 50	For general construction	19,282 68
From accrued interest on bonds.....	135 90	For maintenance.....	29,858 33
From rates, fines, etc.. .	204,002 46	For maintenance (surplus receipts carried to Sinking Fund of Water Works).....	13,589 34
From supplies and repairs.....	7,294 37	For refunds	1,195 70
		For supplies.....	5,943 62
		For Sinking Fund of Water Works.....	57,675 00
		For Water Loan interest	99,015 00
		‡ Balances unexpended.....	31,212 66
	$448,261 31		$448,261 31

† Balance brought forward to the credit of Water Works, Construction Fresh Pond Land account..... .....$13,020 20

* Balance brought forward to credit of Water Works, Construction Stony Brook, additional supply account.... .. .. 18,192 46

‡ Total amount in the City Treasury to the credit of Cambridge Water Works...$31,212 66

Taxes.

The amount of taxes assessed by the Board of Assessors, on the real and personal estates and polls of Cambridge, for the year 1886, was as follows:—

Valuation of real estate	$44,955,200
Valuation of personal estate	14,490,470
	$59,445,670
Assessed at $15.00 per $1,000, gives	$891,685 05
16,531 polls, at $2.00	33,062 00
14 polls of women, at 50 cents	7 00
Bank stock (non-residents separately assessed) .	4,707 45
	$969,461 50

This tax is divided as follows: —

For County assessments	$28,101 71
State assessments	46,740 00
State charge for non-resident bank stock	4,707 45
City purposes *	810,000 00
Overlay	39,912 34
	$929,461 50

*To meet the city expenses, the income from various departments is added to this sum raised by taxation.

Increase in the number of polls since last year	498½
498½ polls at $2.00 each	$997 00
Increase in personal valuation	1,732,215 00
Increase in real estate valuation	2,366,900 00
Total gain in valuation since last year	$4,100,112 00
Number of houses in 1886	9,398
Number of houses in 1885	9,106
Number of houses built during the past year	292
Number of horses assessed	4,312
Number of cows assessed	387
Number of swine assessed	52

Statement of the valuations of the personal property and real estate of the City of Cambridge, with the number of polls, dwellings, and rate of taxation for the past nine years:

Year.	Polls.	Personal.	Real Estate.	Total.	Dwellings.	Rate per $1,000.
1878	11,556	$12,067,440	$37,547,700	$49,615,140	8,037	$18 00
1879	11,892	11,892,898	37,345,200	49,238,098	8,137	17 00
1880	12,644	11,699,660	37,929,400	49,629,060	8,165	16 00
1881	13,678	12,401,390	38,691,900	51,093,290	8,331	16 00
1882	13,922	11,577,080	39,091,200	50,668,280	8,489	16 60
1883	14,870	11,975,640	39,821,700	51,797,340	8,572	16 40
1884	15,399¼	12,259,491	41,289,200	53,548,691	8,781	16 80
1885	16,036	12,758,255	42,588,300	55,346,555	9,106	15 50
1886	16,534½	14,490,470	44,955,200	59,445,670	9,398	15 00

Abatement and discounts upon taxes for the past nine years:

Year.	Total Tax.	Total Abatement.	Total Discounts, at four per cent.	Amount of tax uncollected Dec. 1, each year.
1878	$935,227 04	$26,799 82	$30,061 05	$127,739 86
1879	869,395 00	30,577 37	29,305 80	95,352 28
1880	826,079 23	17,142 79	28,383 13	72,534 65
1881	850,730 61	12,958 90	30,029 45	68,562 84
1882	873,793 41	12,230 20	30,783 78	64,448 68
1883	885,938 96	14,784 62	31,188 00	67,482 66
1884	937,938 64	11,210 31	32,926 83	79,726 52
1885	895,012 06	14,174 11	31,781 78	64,335 30
1886	930,228 50	17,497 00	32,532 57	74,497 50

Number of liquor licenses granted in Cambridge from 1875 to 1886 inclusive, and the amounts received for the same: —

Year.	No. of Licenses	Amounts received.	Year.	No. of Licenses	Amounts received
1875	208	$25,125	1881	155	$19,675
1876	155	18,125	1882	105	18,625
1877	165	26,475	1883	200	32,425
1878	169	22,042	1884	212	35,025
1879	127	15,504	1885	314	43,575
1880	170	21,375	1886	337	46,950

Temporary loans for the past nine years, and interest paid upon the same :—

Year.	Temporary Loan.	Interest paid upon the Loan.
1878	$445,000	$10,652 84
1879	352,000	7,230 20
1880	350,000	6,660 94
1881	575,000	9,933 48
1882	525,000	9,720 05
1883	600,000	14,880 25
1884	540,000	15,795 37
1885	300,000	13,790 52
1886	450,000	5,653 83

Respectfully submitted,

HARRY T. UPHAM,

Auditor of Accounts.

ANNUAL REPORT

OF

THE COMMITTEE ON FINANCE.

This Committee herewith presents its final report of the financial transactions of the city for the year ending November 30, 1886.

By the last monthly statement of the Auditor of Accounts showing the condition of the treasury at the end of the month of November, it appears that the total cash transactions of the City Treasury for the year above stated, amounted to the sum of $2,361,711.93.

In view of this large and increasing business of the City Treasury, the importance of the duties with which this committee is charged, can hardly be overestimated, and the committee itself has been fully sensible of the weight of responsibility it has necessarily borne.

From time to time during the year, authority has been given by the City Council for the creation of permanent city loans for various purposes, and under such authority the committee has negotiated bonds as follows: —

Water works (Stony Brook extension)	$125,000 00
Water works (Fresh Pond Land Loan)	75,000 00
Sewers, (construction, Belmont district)	25,000 00
Water works (construction)	18,000 00
	$243,000 00

The annual estimates reported by this committee, in the month of February last, as subsequently modified and adopted by the City Council, were as follows: —

Appropriations, 1886.

Estimated expenses on appropriation accounts . . .	$1,246,810 92
Allowance for estimated uncollected taxes of the year 1886, remaining uncollected as of Nov. 30, 1886. . .	65,000 00
	$1,311,810 92

Contra.

Cash in treasury Dec. 1, 1885, ...	$44,525 92	
Estimated revenue on appropriation account	325,785 00	
Amount of corporation tax from Commonwealth for 1886. (estimated)	36,000 00	
Amount of National Bank tax from Commonwealth for 1886, (estimated) $16,000 less $6,000	10,000 00	
Uncollected taxes 1885 and previous years (estimated)	55,000 00	
Proceeds from sale of City Lands and mortgage notes (estimated)	10,000 00	
		$481,310 92
Balance to be provided for .		$830,500 00

This sum was subject to such additions by the assessors, as by law they are authorized and directed to make.

It appears by the above statement that the sum deemed necessary to be raised to meet the expenses of the city for the financial year ending Nov. 30, 1886, was $830,500. Provision was made by the City Council, for this sum, in the following manner, viz:—

. By the issue of water loan bonds bearing interest not exceeding four per cent and running twenty years, to an amount equal to the appropriation, before recited, for water works (construction) . .		$15,000 00
2. By assessment upon the polls and estates of the inhabitants of Cambridge, etc., for the current year, being the amount required for municipal expenses for the year. (The state tax and county were added hereto by the assessors, by authority of law)		$810,000 00
		$825,000 00
Balance unprovided for . .		$5,500 00
Total . .		$830,500 00
To the sum ordered to be raised by taxation as hereinbefore stated		$810,000 00

There were added by the assessors: —

Amount of overlay	$39,912 34	
State tax for 1886	46,740 00	
County tax for 1886	28,101 71	
Amounts carried forward	$114,754 05	$810,000 00

Amount brought forward	$114,754 05	$810,000 00
Non-resident bank tax	4,707 45	
Additional warrants	767 00	
Total additions by the assessors		$120,228 50
Amount of assessor's warrant		930,228 50
Of this sum there was collected and paid into the city treasury the sum of		855,731 00
Leaving unpaid		74,497 50
Estimated deficiency provided for in the financial estimate of the year		65,000 00
Amount of deficiency in excess of estimate above stated .		$9,497 50
The amount estimated as revenue from uncollected taxes for the year 1885, and previous years, was	$55,000 00	
Amount collected	52,176 23	
Amount of deficiency in excess of estimate of revenue from this source		$2,824 77
Total deficiency in excess of estimates of revenue from taxes		$12,322 27

In other accounts there was an excess of revenue over the estimates, as shown below:--

	Estimated Revenue.	Actual Revenue.	Excess.
On Appropriation Accounts, not including Water Works.....	$104,975 00	$136,204 47	$31,229 47
City Lands and Mortgage Notes.	10,000 00	16,966 03	6,966 03
	$114,975 00	$153,170 50	$38,195 50

The excess of receipts above the estimates upon the foregoing accounts was	$38,195 50
Less deficiency in estimate of collections from taxes .	12,322 27
Net surplus revenue	$25,873 23

Following is a statement showing the total amount of appropriations made from time to time during the year, and the expenditures thereunder.

The gross amount appropriated at the beginning of the year was		$1,246,810 92
Additional appropriation for sewer (construction), Belmont District, provided for by the creation of a City Debt		$25,000 00
Amount of premium received upon the Sewer Bonds, issued for the above		$322 50
Amount unexpended from the appropriation for Cambridge Cemetery extension, in 1885, cash reserved in the City Treasury		$947 81
Appropriation for Water Works, (construction, Fresh Pond,) provided for by Funded Debt	$90,000 00	
Revenue from various sources	2,750 00	
		$92,750 00
Additions to various City appropriations from excess of revenue in sundry accounts		$43,915 54

Stony Brook Water Supply, provided for by Funded Debt and revenue, and amounting as follows: —

Unexpended balance of 1885	$15,443 65	
Premium on bonds and other revenue	401 25	
Appropriation made in 1886	200,000 00	
		$215,844 90
Total amount of appropriations made during the year including Water Works account, (Stony Brook Extension), and the Cambridge Cemetery Extension accounts, balance at the close of the year 1885		$1,625,591 65
Amount actually expended upon the appropriations included in the above footings		$1,460,016 14
Balance		$165,575 51

From this last named sum there should be deducted the amount of the unexpended balances upon the following accounts, all of which were provided for, by other means than the annual tax levy:

Sewer construction, (Belmont)	$16,891 56	
Water Works construction, (Fresh Pond)	28,020 20	
Water Works construction, (Stony Brook)	93,192 45	
		$138,104 22
Balance unexpended on the ordinary appropriation accounts as shown by the Auditor's final statement to December 1, 1886		$27,471 29

This balance should be subject to a further deduction of the

amount of the following unexpended balances of Water Works accounts:

Interest on Water Loan	$9,620 00	
Water Works, (maintenance)	141 67	
Water Works, (refunds)	304 30	
Water Works, (supplies)	1,350 75	
		$11,416 72
Net unexpended balance on city appropriation accounts		$16,054 57

The total expenditure under appropriation heads in 1886 was		$1,460,016 14
Less the following accounts not provided for by means of the tax levy: Cambridge Cemetery Extension, balance paid from amount reserved in the treasury, and brought over from the year 1885,	$ 947 81	
Sewers Construction, (Belmont)	8,430 94	
WATER WORKS ACCOUNTS.		
Interest on Water Loan	$99,015 00	
Sinking Fund, water works	57,675 00	
Water Works (construction),	19,282 68	
Water Works (construction), "Fresh Pond"	64,729 80	
Water Works, maintenance	29,858 33	
Water Works, abatements	2,998 37	
Water Works, refunds	1,195 70	
Water Works, supplies	5,943 62	
Water Works, surplus receipts paid to Sinking Fund	13,589 34	
Water Works, Stony Brook	122,652 42	
	416,940 26	
		426,319 01
Balance, being amount paid from the ordinary revenue and taxation		$1,033,697 13
The total expenditure under appropriation heads in 1885, was	$1,249,920 52	
Less Water Works accounts	$193,568 00	
Due Sinking Funds (1884)	35,040 00	
Lee Street Church property	6,500 00	
	235,108 54	
		1,014,811 98
Increase of expenses in 1886 over footings of previous year		$18,885 17

The following tables exhibit a comparison of the amounts expended upon the several appropriation accounts included in the balances above given, in the years 1886 and 1885 respectively, including only such items as were provided for in the annual tax levies.

CITY ACCOUNTS.	Expended, 1886.	Expended, 1885.	Increase.	Decrease.
Abatements (Taxes)	$17,497 00	$45,955 89	$3,322 89	
Discounts (Taxes)	32,532 57		750 79	
Bridges	2,468 75	4,991 61		2,522 86
Bridges, West Boston, Craigie and Prison Point	10,443 65	6,838 16	3,605 49	
Cambridge Cemetery	14,780 16	11,686 53	3,093 63	
Cambridge Public Library	6,893 47	6,643 51	249 96	
City Buildings (Care and Repairs)	11,217 88	10,392 13	825 75	
Engineering	5,550 74	6,340 45		789 71
Fire Department	58,375 98	59,341 15		965 17
Health Department	2,788 70	3,173 26		384 56
Incidental Expenses	44,204 83	35,401 94	8,802 89	
Interest	116,093 33	131,668 12		15,574 79
Lighting Streets	31,578 71	32,269 07		690 36
Pauper Department	23,856 54	21,456 31	2,400 23	
Pauper Dep't (Almshouse)	23,718 48	21,340 25	2,378 23	
Pauper Dep't (House Offal)	14,931 84	13,541 68	1,390 16	
Police Department	80,404 44	78,357 73	2,046 71	
Salaries	26,419 79	23,795 90	2,623 89	
School Department (Drawing Schools)	971 10	933 15	37 95	
School Department (Evening Schools)	1,325 90	1,683 52		357 62
School Department (Incidental Expenses)	645 94	596 47	49 47	
School Department (Salaries)	165,277 42	159,840 13	5,437 29	
School Department (Text-Books and Stationery	10,680 52	13,708 47		3,027 95
School Houses (Care and Repairs)	30,932 58	32,661 02		1,728 44
School Houses (New and Furniture, New High School)	9,678 18		9,678 18	
School Houses (New and Furniture, Webster School)	9,113 93			
School Houses (New and Furniture, Additional)	3,876 65			
School Houses (New and Furniture in Ward 2)	12,963 92	11,589 01	14,365 49	
Sewers (Construction)	21,334 14	23,954 41		2,620 27
Sewers (Maintenance)	22,972 00	16,990 99	5,981 01	
Shade Trees and Public Grounds	4,450 05	4,013 93	436 12	
Sinking Funds	63,055 00	76,225 00		13,170 00
State Aid	13,137 00	12,397 00	740 00	
Stationery and Printing	3,194 85	2,950 47	244 38	
Street Dep't (Paving):—				
Main St. from Pelham to west of R. R. crossing	15,870 92			
Harvard St., north side, from Bow to Dunster Streets	4,000 00			
Ordinary Paving and Repairs	8,650 02	13,894 49	14,626 45	
Street Dep't (Repairs)	84,266 42	90,924 02		6,657 60
Street Dep't (New Stable)		14,199 20		14,199 20
Street Dep't (Watering)	21,577 48	21,557 01	20 47	
Street Dep't (Widening and Extension)	1,966 25	3,500 00		1,533 75
Totals	$1,033,697 13	$1,014,811 98	$83,107 43	$64,222 28

Increase of expenditure on sundry appropriations	$83,107 43
Decrease of expenditure on sundry appropriations	64,222 28
Net increase in 1886	18,885 15

In addition to the appropriations made at the beginning of the year, the City Council by an order approved Oct. 14, 1886, further appropriated the sum of $25,000.00 for the purpose of constructing a common sewer in Mount Auburn street from Lowell street to McDonald street, with special reference to the ultimate drainage of the "Belmont" annexed district. The order authorized the creation of a city debt for the above mentioned purpose, payable in not exceeding twenty years.

The Loan thus authorized, and also other loans on account of the Cambridge Water Works heretofore provided for, were negotiated as follows:

Water Works (Stony Brook construction), Bonds dated April 1, 1886, payable in 25 years and redeemable in 10 years at option of the city, at 3½ per cent	$100,000 00	
Water Works, (Fresh Pond Land Loan) Bonds dated April 1, 1886, payable in 25 years and redeemable in 10 years at option of the city at 3½ per cent	75,000 00	
Amount taken at par by Commissioners of the Sinking Fund		$175,000 00
Sewers, (construction) Belmont, Bonds dated Nov. 1, 1886, payable in 10 years at 3½ per cent	$25,000 00	
Premium	322 50	
		$25,322 50
Water Works, (regular construction) Bonds dated Nov. 1, 1886, payable in 20 years at 3½ per cent	$18,000 00	
Premium	232 50	
		$18,232 50
Water Works, (Stony Brook construction) Bonds dated Nov. 1, 1886, payable in 20 years at 3½ per cent	25,000 00	
Premium	322 50	
		$25,322 50
		$243,877 50

All the bonds dated Nov. 1, 1886, were sold at the rate of $\$1.01\frac{29}{100}$ or $1,012.90 for every $1,000.00.

The premium received upon this last issue of bonds was added to the respective appropriations as above shown.

Of the appropriations for Sewers (construction,) "Belmont"	$25,322 50
There was expended the sum of	$8,430 94
Leaving a balance to be reserved for carrying on the work during the next year,—in the sum of	$16,891 56

The expenditure of all moneys raised and appropriated for the Cambridge Water Works, being under the especial direction of the Water Board, further details of the same may be found in the annual report of that board.

The annual settlement with the Commonwealth was made in November 1886, and the transaction included in the accounts of the year, as follows:—

RECEIVED FROM COMMONWEALTH.

Corporation tax, 1886	$44,981 20	
National Bank tax, 1886	16,618 01	
State aid, Acts 1879, Chap. 301	8,980 25	
Support of State paupers	349 90	
Support of State paupers, temporary	44 22	
Burial of State paupers	50 00	
State aid, Acts 1879, Chap. 252	1,301 50	
		$72, 325 08

PAID THE COMMONWEALTH.

State tax, 1886	$46,740 00	
National Bank tax, 1886	5,700 08	
		$52,440 08
Balance received by the city,		$19,885 00
The amount borrowed on temporary loans in 1886 and paid from the taxes of the year was		$450,000 00
Borrowed in 1885, and paid from taxes of same year		300,000 00
Increase in 1886		$150,000 00
The amount due the Commissioners on the Sinking Funds, as of Nov. 30, 1886, was advanced in the month of July, viz:—		$63,055 00
For this advance payment, interest was charged at the same rate then paid by the city, the same amounting to		$821 00
The amount paid for interest on temporary loans was		$5,644 91
Less amount received from Commissioners of the Sinking Funds		$821 00
Balance due in 1886		$4,823 91

By a comparison of the amounts paid for interest on temporary loans during the past two years it appears that,—

The amount paid for interest upon temporary loans in 1885 was	$13,790 52
Interest so paid in 1886,	4,832 83
Decrease in 1885	$8,957 69

A sub-committee of this committee, met at the treasurer's office at the close of business Nov. 30, and counted the cash on hand.

The amount was found to be	$183,619 54

This amount is subject to the following liabilities, viz:—

Amount of "Belmont" sewer loan, unexpended	$16,891 56	
Amount of Fresh Pond loan, unexpended	13,020 20	
Amount of Stony Brook loan, unexpended	18,192 46	
Amount of unpaid bills of November to be paid in December, 1886, including County tax	86,415 49	
		$134,519 71
Balance in treasury as per auditor's account Nov. 30, 1886		$49,099 83

The last named sum represents the actual balance in the treasury at the close of business, Nov. 30, 1886, after providing for all liabilities incurred in 1886, and due and approved by the proper boards and committees before the close of the financial year.

A subsequent examination was also made by the committee, of the accounts respectively kept by the treasurer and auditor, and the same were compared and found to be accurately kept. All were ascertained to be correct.

The usual tables from the assessors' books are given below:—

Polls and Valuation of Estates in 1886.

Wards.	Polls.	Personal.	Real Estate.	Total.	Dwellings.
1	$2,703\frac{3}{4}$	$7,426,980	$11,455,400	$18,882,380	1,842
2	$4,672\frac{1}{2}$	3,132,390	11,403,700	14,536,090	2,507
3	$3,197\frac{1}{4}$	1,403,200	7,134 700	8,537,900	1,432
4	$4,188\frac{1}{4}$	1,576,300	9,293,200	10,869,500	2,492
5	1,773	951,600	5,668,200	6,619,800	1,125
Total	$16,534\frac{1}{2}$	$14,490,470	$44,955,200	$59,445,670	9,398

Polls and Valuation of Estates in 1885.

Wards.	Polls.	Personal.	Real Estate.	Total.	Dwellings.
1	2,715	$5,468,950	$11,094,600	$16,563,550	1,779
2	$4,481\frac{3}{4}$	3,354,315	10,740,500	14,094,815	$2,439\frac{1}{2}$
3	3,156	1,454,590	6,945,500	8,400,090	1,421
4	$3,975\frac{1}{4}$	1,553,400	8,353,500	9,906,900	2,385
5	1,708	927,000	5,454,200	6,381,200	1,082
Total	16,036	$12,758,255	$42,588,300	$55,346,555	$9,106\frac{1}{2}$

From the total valuations, as made by the assessors, at the beginning of each of the years 1885 and 1886, abatements were subsequently made during the years respectively mentioned, as follows: —

Original valuation in 1885	$55,346,855 00	
Abatements made in 1885	888,828 00	
Amount of valuation, 1885, as reduced by abatements		$54,457,727 00
Original valuation in 1886	$59,445,670 00	
Abatements made in 1886	1,213,354 00	
Amount of valuation, 1886, as reduced by abatements		$58,232,316 00

The following is a comparative statement of polls, valuations and dwellings, after making the corrections in the assessors'

tables, required by reason of the abatements made as above stated : —

Years.	Polls.	Valuation.	Dwellings.
1886	16,534½	$58,232,316	9,398
1885	16,036	54,457,727	9,106½
Actual increase in 1886	498½	$3,774,589	291½

The amount assessed upon the foregoing polls and valuations was,—

In 1886	$930,228 50
In 1885	895,012 06
Increase in 1886	$35,216 44

By the above it appears that the amount of the city tax this year was $35,216.44 more than the amount of tax for the previous year. Owing to the increased valuation, as shown by these figures, there was a small reduction effected in the tax rate, from that of 1885, notwithstanding there was a much larger sum raised by taxation than in that year. The net valuation herein given shows an increase of the sum of $3,774,589, this sum being $2,182,130 larger than the increase made in 1885 over the net valuation of the previous year after deducting all abatements made after the valuation had been fixed by the assessors.

The rate of taxation was fixed by the assessors at $15.00 per $1,000, the reduction previously referred to being 50 cents per $1,000, from the tax rate of the previous year. By the provisions of the city ordinance this rate was subject to a discount of four per cent to early tax-payers, who thus fixed their own rate of taxation at $14.40 per $1,000.

The usual rate of interest was charged upon all taxes remaining unpaid after November 1, as authorized by law.

Inasmuch as this committee was authorized to negotiate various city loans, amounting in all to the sum of $243,000.00, a brief summary of the present condition of the city debt may be of interest in connection with this report. As full details of this matter will be found in the report of the Auditor of Accounts

reference may be made thereto, for particulars of the various city loans.

The amount of the Funded Debt Nov. 30, 1885 was	$1,838,000 00	
Sewer Loan, Belmont, added in 1886	25,000 00	
	$1,863,000 00	
Amount paid in 1886,	167,000 00	
		$1,696,000 00
Less amount of Sinking Fund, Nov. 30, 1886		467,182 12
		$1,228,817 88

Also the following additional liabilities: —

Note to Cambridge Savings Bank	$6,500 00	
Note to Commissioners of the Sinking Funds of the Water Works	200,000 00	
Sundry trust funds	26,000 00	
		$232,500 00
Total city debt, proper		$1,461,317 88

The Water Works debt is as follows: —

Funded water loan. Nov. 30, 1885	$1,747,500 00	
Added in 1886	218,000 00	
	$1,965,500 00	
Less amount paid in 1886	100,000 00	
	1,865,500 00	
Less amount of Sinking Funds of Water Works	892,005 97	
		$973,494 03
Total city and water debt		$2,434,811 91

With reference to the city debt proper, it may be said that the amount is fully offset by the estimated value of the various kinds of city property exclusive of that belonging to the water works. The estimates are based upon figures reduced from the actual cost, and start from appraisals made several years since by the committee on public property for the time being, and by other committees and heads of departments specially in charge of the various kinds of property particularly mentioned. A comparison of the city debt with the valuations of the different kinds of city property is given below.

GENERAL APPRAISAL OF CITY PROPERTY.

Almshouse and land		$45,000 00
Cambridge Cemetery Grounds:—		
Original purchase, appraisal 1855	$17,000 00	
Additional, 1885	62,750 00	
		79,750 00
City buildings, land and furniture		282,284 50
City lands, and surrendered estates, salable		27,571 55
City lands, occupied by Sewer department		4,740 00
City lands, occupied by Water Works		6,660 00
City flats, 162,000 ft.		3,000 00
Commons and public squares, (unappraised)		
Engine houses, house No. 5 Inman Square		12,000 00
Engine house lot, reserved on Portland Street		1,763 85
Fire apparatus		76,000 00
Gravel-pit near Fresh Pond		4,000 00
Mill-Pond lands		15,000 00
School houses and lands		716,000 00
Tax-title lands		10,000 00
Wharf, Main Street, Lower Port		7,000 00
		$1,283,769 90
The net city debt, as previously shown, is		1,228,817 88
Estimated value of property in excess of city debt		$59,952 02

The vast net-work of Sewers in this city, extending through seventy-three miles of streets and costing many thousands of dollars, is not considered in the above estimate, but if the cost were added it would only add force to the fact that the debt of our city represents actual and tangible property of positive value.

The presentation of an appraisal of some of the city property as assets, apparently balancing the city liabilities, is not to be regarded wholly in that light, but should be considered also as an indication of the various municipal necessities and improvements for which the existing debt has, from time to time, provided, and which it largely represents.

Amount required for the Sinking Funds, and in the diminution of the interest account: —

The amount required for the Sinking Fund

In 1886, was	$63,055 00
In 1887 it will be	59,695 00
Reduction in 1887	$3,360 00

It is expected that the interest account will show a proportionate reduction during the coming year.

Various propositions involving considerable expenditure, have been, from time, referred to this committee, and duly considered, and on its recommendation the city council has authorized the following: —

1. The purchase of common on Pleasant Street, south of the City Hall.
2. The construction of new heating apparatus, and the enlargement of the boiler house at the almshouse.
3. The construction of a brick vault at the city hall for the public records.
5. The construction of improved water-closets at the Allston schoolhouse.
5. The construction of a large sewer on Mount Auburn Street for the benefit of the "Belmont" district, and neighborhood.

Among the recommendations made to the city council by this committee at the close of the year, was an order authorizing the committee to restore and fund the amount heretofore paid into the treasury for the "perpetual care of lots in the Cambridge Cemetery." This amount, prior to the year 1884, had reached the sum of $5,200.00 which had been absorbed in the city treasury.

The amount paid into the treasury for the purpose before mentioned, in the year 1886 was $1,225.00, making a total sum of $6,525.00.

Under authority of the order aforesaid, the committee has requested the city treasurer to take from the surplus funds in the treasury the above mentioned sum of $6,525, and invest the same in a permanent form. For this purpose there has been retained from the amount of the bonds issued on account of the water works (construction) loan of $18,000, the sum of $7,000 in city bonds, payable in 20 years from November 1, 1886, which bonds were purchased at the same rate as was paid to the city for the other bonds of the same date. The amount of the Cemetery Fund received into the city treasury during the year 1884 and 1885 was $2,450.

This amount has been deposited by the Treasurer in the Cambridge and Cambridgeport Savings Banks, where it draws interest.

Including the two sums hereinbefore named, the Cemetery Fund now amounts to $8,975.

It is believed that this and such of the various other trust funds held in the city treasury as are under the control of the city council, should all be managed by one board of commissioners, or by the Committee on Finance for the time being. Measures looking to such change in reference to these trust funds will doubtless be proposed to the in-coming city council.

This committee has thus far endeavored to review in some measure the various financial transactions of the year. The outlays have been larger than during the year 1885, and although that year seemed exceptionally prosperous as related to the finances of the city, this year has been equally so. The large surplus in the revenue from appropriation accounts over the estimates, and the increase in the valuation, have enabled us to meet easily the increased expenses, and also leave a large balance in the treasury at the close of the year.

WM. E. RUSSELL,
NATHAN C. LOMBARD,
GEO. A. ALLISON,
EDWARD R. COGSWELL,
JOHN H. CORCORAN,
EDGAR R. CHAMPLIN,
WARREN IVERS,
JOSEPH A. BALL,
ALVIN F. SORTWELL,
JOHN W. COVENEY,

Committee on Finance.

REPORT

OF

THE CITY TREASURER.

OFFICE OF CITY TREASURER, Dec. 1, 1886.

To the Honorable the City Council:

The undersigned respectfully presents the annual report of the transactions of the City Treasury for the year ending Nov. 30, 1886. The detailed report hereto appended shows that the

Cash balance in the treasury November 30, 1885, was . .	$148,614 76
The amount received during the year ending November 30, 1886, was	2,300,794 57
	$2,449,409 33
The authorized payments during the year amounted to . .	$2,265,789 79
Leaving a balance in the treasury November 30, 1886, of .	$183,619 54

In addition to this balance the treasurer holds as a special trust account the sum of $5,000, to meet that amount of City and Water bonds, due in the years 1883 and 1884, not yet presented for payment.

Respectfully submitted,

WM. W. DALLINGER, *City Treasurer.*

City of Cambridge in Account Current From Dec. 1, 1885, to

Dr.

To authorized payments charged to City Accounts, as follows :—

Abatements (Taxes)	$17,265 06
Discounts, (Taxes)	32,532 57
Bridges	2,475 12
Bridges, (West Boston, Craigie's, and Prison Point)	10,375 43
Cambridge Public Library	6,815 98
Cambridge Cemetery	15,420 00
Cemetery Fund	6,525 00
City Buildings (Care and Repairs)	10,432 40
Engineering	5,951 20
Fire Department	58,678 81
Health Department	3,226 98
Incidental Expenses	38,258 69
Interest	116,115 00
Interest on Water Loan	99,015 00
Lighting Streets	32,350 43
Loan, City	100,000 00
Loan, Water	100,000 00
Loan, Low Land	60,000 00
Loan, Temporary	450,000 00
Loan, Street Widening	7,000 00
Pauper Department	23,877 42
Pauper Department (Almshouse)	24,339 12
Pauper Department (House Offal)	14,857 26
Police Department	83,827 37
Salaries	26,190 68
School Department (Evening Schools)	1,638 65
School Department (Drawing Schools)	1,187 10
School Department (Incidental Expenses)	640 94
School Department (Salaries)	181,413 67
School Department (Text Books and Stationery)	9,655 83
School Houses (Care and Repairs)	30,652 30
School Houses (New, and Furniture Additional)	3,692 07
School Houses (New and Furniture)	1,185 55
School Houses (New and Furniture, New High)	9,678 18
School Houses (New and Furniture, Webster)	9,113 93
School Houses (New and Furniture, Ward Two)	12,277 74
Sewers (Construction)	20,616 87
Sewers (Construction Belmont)	2,327 15
Sewers (Maintenance)	23,013 52
Shade-Trees and Public Grounds	4,324 35
Sinking Funds	63,055 00
Sinking Fund of Water Works	57,675 00
State Aid	14,165 50
Stationery and Printing	3,285 51
Street Department (Paving)	24,456 72
Street Department (Repairs)	85,430 42
Street Department (Widening)	1,966 25
Street Department (Watering)	21,734 94
Tax (National Bank)	6,079 27
Tax (County)	29,381 54
Tax (State)	46,740 00
Tax Lien Account	45 76
Water Works (Construction)	202,264 07
Water Works (Maintenance)	42,939 78
Water Works (Abatements)	2,998 37
Water Works, Rates, Fines, etc.	1,195 70
Water Works (Supplies)	5,428 59
Total payments	$2,265,789 79
Cash balance in the treasury, Nov. 30, 1886	183,619 54
	$2,449,409 33

NOV. 30 1886, (INCLUSIVE) WITH WM. W. DALLINGER, *City Treasurer.*

Cr.

By cash received and credited to City Accounts as follows :—

Discounts (Taxes)	$40 20
Bridges (West Boston, Craigie's and Prison Point)	434 30
Cambridge Public Library	2,745 51
Commissioners of Sinking Funds	167,000 00
Cemetery Fund	1,275 00
City Lands	7,944 91
City Buildings (Care and Repairs)	1,980 11
Cambridge Cemetery	15,125 32
Engineering	1 00
Fire Department	254 15
Incidental Expenses	50,372 61
Interest	3,026 44
Interest on Water Loan	135 90
Lighting Streets	59 46
Loan, Water	218,000 00
Loan, Sewer	25,000 00
Loan, Temporary	450,000 00
Notes Receivable	1,596 63
Pauper Department	4,603 74
Pauper Department (Almshouse)	7,354 70
Pauper Department (House Offal)	6,951 23
Police Department	6,292 00
School Department (Salaries)	973 63
School Department (Text Books and Stationery)	269 73
School Houses (Care and Repairs)	14 37
Sewers (Construction)	8,372 52
Sewers (Construction Belmont)	322 50
Sewers (Maintenance)	1,747 71
State Aid	10,368 75
Street Department (Paving)	1,531 37
Street Department (Repairs)	2,260 64
Street Department (Watering)	11,102 48
Surrendered Estates (Sale Account)	7,424 39
Tax (Corporation)	47.006 25
Tax (National Bank)	16,618 01
Taxes, 1880	4 00
Taxes, 1881	18 00
Taxes, 1882	76 98
Taxes, 1883	124 92
Taxes, 1884	1,220 68
Taxes, 1885	50,731 65
Taxes, 1886	855,731 00
Trustees of Water Loan Sinking Fund	100,000 00
Water Works (Construction)	3,384 95
Water Works (Rates, Fines, etc.)	204,002 46
Water Works (Supplies)	7,294 37
Total Receipts	$2,300,794 57
Cash Balance in the treasury, Dec. 1, 1885	148,614 76
	$2,449,409 33

WM. W. DALLINGER, *City Treasurer.*

REPORT

OF THE

COMMISSIONERS OF THE SINKING FUNDS OF THE CITY OF CAMBRIDGE.

To the Honorable City Council:—

THE undersigned Commissioners of the Sinking Funds of the city, in compliance with the ordinance, herewith present their eleventh annual report: —

Dr.

Amount of the funds Nov. 30, 1885, was . .	$542,954 20	
Amount of interest received during the year on investments	26,829 25	
Amount of premium received during the year on securities sold	2,844 80	
Amount received from the city of Cambridge derived from taxation	63,055 00	
		$635,683 25

Cr.

Amount paid the City Treasurer of Cambridge in bonds of said city, maturing July 1, 1886	$31,000 00	
Amount paid the City Treasurer of Cambridge in cash with which to meet Cambridge City Loan bonds, maturing July 1, 1886	99,000 00	
Amount paid the City Treasurer of Cambridge in cash with which to meet Cambridge Low Land Loan bonds, maturing July 1, 1886	33,000 00	
Amount paid the City Treasurer of Cambridge in cash with which to meet Cambridge Street Widening Loan bonds, maturing July 1, 1886	4,000 00	
Amount paid as accrued interest on bonds purchased for investment during the year . .	50 13	
Amount carried forward	$167,050 13	

Amount brought forward	$167,050 13	
Amount paid city of Cambridge as interest on prepayment from the City Treasury . . .	821 00	
Amount paid as premium on bonds purchased for investment during the year	630 00	
Amount of the funds Nov. 30, 1886, all securities at par	467,182 12	
		$635,683 25

SECURITIES BELONGING TO THE SINKING FUNDS NOV. 30, 1886.

Cambridge Low Land Loan, five per cent bonds, maturing Oct. 1, 1887	$120,000 00	
Cambridge Sewer Loan, six per cent bonds, maturing July 1, 1896	11,000 00	
Cambridge Street Widening Loan, six per cent bonds, maturing July 1, 1904	90,000 00	
Cambridge Sewer Loan, six per cent bonds, maturing July 1, 1904	2,000 00	
Cambridge Street Widening Loan, six per cent bonds, maturing July 1, 1905	14,000 00	
Cambridge Sewer Loan, six per cent bonds, maturing July 1, 1905	49,000 00	
		$286,000 00
Town of Woburn, five per cent registered bonds, maturing July 2, 1887	$20,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1888	2,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1889	9,000 00	
Town of Southboro, four per cent bonds, maturing March 25, 1889	2,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1890	10,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1891	7,000 00	
City of Cleveland, Ohio, four per cent coupon bonds, maturing Oct. 1, 1891	14,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1892	9,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1893	8,000 00	
City of Cleveland, Ohio, four per cent coupon bonds, maturing April 1, 1893	2,000 00	
City of Cleveland, Ohio, four per cent coupon bonds, maturing Oct. 1, 1893	2,000 00	
City of Cleveland, Ohio, four per cent coupon bonds, maturing Oct 1, 1893	1,000 00	
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1894	7,000 00	
Amounts carried forward	$93,000 00	$286,000 00

Amounts brought forward	$93,000 00	$286,000 00
Town of Brookline, $3\frac{65}{100}$ per cent coupon bonds, maturing Feb. 1, 1895	1,000 00	
City of Providence, R. I., $4\frac{1}{2}$ per cent coupon bonds, maturing June 1, 1899	64,000 00	
City of Cleveland, Ohio, $3\frac{65}{100}$ per cent coupon bonds, maturing Sept. 1, 1902	1,000 00	
City of Lawrence, Mass., four per cent coupon bonds, maturing July 1, 1904	12,000 00	
Town of Beverly, Mass., four per cent coupon bonds, maturing July 1, 1911	9,000 00	
		180,000 00
		$466,000 00
Cash in First National Bank of Cambridge		1,182 12
		$467,182 12

The bonded city debt, which the foregoing sinking funds are expected to pay, matures as follows, viz:—

Oct. 1, 1887, Low Land Loan bonds, 5 per cent	$120,000 00
Apr. 1, 1889, City Loan bonds, five per cent	100,000 00
July 1, 1890, City Loan bonds, six per cent	20.000 00
July 1, 1893, City Loan bonds, five per cent gold	150,000 00
July 1, 1893, Land Loan bonds, six per cent	10,000 00
July 1, 1893, Paving Loan bonds, six per cent	100,000 00
July 1, 1893, Street Loan bonds, six per cent	13,000 00
July 1, 1894, Paving Loan bonds, six per cent	130,000 00
Apr. 1, 1895, Municipal Loan bonds, four per cent . . .	200,000 00
July 1, 1895, Paving Loan bonds, six per cent	25,000 00
Oct. 1, 1895, Sewer Loan bonds, six per cent	20,000 00
July 1, 1896, Sewer Loan bonds, six per cent	29,000 00
Nov. 1, 1896, Sewer Loan bonds, six per cent	25,000 00
July 1, 1903, Sewer Loan bonds, six per cent	136,000 00
July 1, 1903, Street Widening Loan bonds, six per cent. . .	10,000 00
July 1, 1904, Sewer Loan bonds, six per cent	295,000 00
July 1, 1904, Street Widening Loan bonds, six per cent . .	90,000 00
July 1, 1905, Sewer Loan bonds, six per cent	144,000 00
July 1, 1905, Street Windening Loan bonds, six per cent . .	14,000 00
Aug. 1, 1905, Cambridge Cemetery Extension Loan bond, four per cent	65,000 00
	$1,696,000 00

Bonds of the city to the amount of $167,000.00 of 6 per cents, issued in 1871 and 1876, matured July 1, and were paid from this fund. New city bonds to the amount of $25,000.00 of $3\frac{1}{2}$ per cents, dated November 1, 1886, and payable in 1896, have been issued on account of the Belmont District sewer. Deducting the latter from the amount paid July 1 shows a net reduction of the

bonded debt for the year of $142,000.00. The present funded debt of Cambridge, exclusive of the Water Debt, is now $1,696,000.00, and the amount of Sinking Fund assets towards its payment is $467,182.12, leaving the net amount of bonded debt of the city December 1, 1886, $1,228,817.88. The amount of city bonds paid and cancelled by this board since its organization in 1876 is $2,031,000.00, or an annual average of upwards of $200,000.00 during the full period, and making thereby a saving of interest on this amount of $121,860.00 annually.

The largest amount required to be raised by taxation for this fund, under the statute of 1875, in a single year during this period, was $164,865.00 in 1878–79–80–81 and 1882. The amount required for 1887 will be $59,695.00, or a reduction of $105,170.00 from the year above mentioned. This amount, together with the annual amount of reduction of interest, $121,860.00, shows a total reduction of $227,030.00 from amount to be raised by taxation yearly, or nearly $4.00 per thousand on the entire valuation of the city. This result is due to the operation of the Sinking Fund under the statute of 1875, which provided the means to pay off a large amount of the indebtedness of 1877, as it became due, instead of a renewal of the debt.

It is with sincere regret that we have to record with this report the loss by death of one of our associates during the past year. Mr. John M. Tyler, one of the oldest members in his term of service, died suddenly January 9, 1886. We cheerfully add our tribute of esteem and respect for his faithful and conscientious regard for the best interests of our city in this department of public service.

Respectfully submitted,

CHAS. H. SAUNDERS,
JOS. A. HOLMES,
S. S. SLEEPER,
FRANK A. ALLEN,
Commissioners of the Sinking Funds of the City of Cambridge.

Cambridge, Dec. 17, 1886.

REPORT

OF THE

TRUSTEES OF THE SINKING FUND OF THE CAMBRIDGE WATER WORKS.

THE undersigned, Trustees of the Sinking Fund of the Cambridge Water Works, herewith submit their annual report of the fund committed by law to their charge: —

Dr.

The amount of the fund at the last report, Nov. 30, 1885, was	$874,373 38	
The amount received during the year from the City Treasury of Cambridge, the same being derived from the annual water-rates and being equal to three per cent on the amount of outstanding Water bonds, was	57,675 00	
Amount received during the year as interest on investments, was	40,132 05	
Amount received during the year as premium on securities sold to change investments, was	6,332 50	
Amount received at the close of the year from the City Treasury, of surplus in the running accounts of the Water Works for 1886	13,589 34	
		$992,102 27

Cr.

Amount paid the Treasurer of Cambridge with which to meet the Water bonds maturing July 2, 1886	$100,000 00	
Amount paid as accrued interest on bonds purchased for investment	96 30	
Amount of the Fund Nov. 30, 1886, all securities taken at par	892,005 97	
		$992,102 27

The following is a list of the securities belonging to the fund, Nov. 30, 1886: —

Cambridge Water Loan, six per cent bonds, maturing April 1, 1887	$6,000 00	
Cambridge Water Loan, six per cent bonds, maturing April 1, 1888	25,000 00	
Cambridge Water Loan, six per cent bonds, maturing May 1, 1889	8,000 00	
Cambridge Water Loan, six per cent bonds, maturing July 1, 1890	31,000 00	
Cambridge Water Loan, six per cent bonds, maturing May 1, 1891	26,000 00	
Cambridge Water Loan, six per cent bonds, maturing July 1, 1892	1,000 00	
Cambridge Water Loan, four per cent bonds, maturing Nov. 1, 1894	6,000 00	
Cambridge Water Loan, six per cent bonds, maturing April 1, 1895	37,000 00	
Cambridge Water Loan, 3½ per cent bonds, maturing after April 1, 1896	100,000 00	
Cambridge Water Loan, 3½ per cent bonds, maturing after July 1, 1896	75,000 00	
Cambridge Water Loan, six per cent bonds, maturing July 1, 1896	46,000 00	
Cambridge Water Loan, six per cent bonds, maturing July 1, 1897	16,000 00	
Cambridge Water Loan, five per cent bonds, maturing July 1, 1898	12,500 00	
Cambridge Contingent Loan, four per cent note, dated Dec. 1, 1883	200,000 00	
		$589,500 00
Town of Southboro, four per cent bonds, maturing Mar. 25, 1887	$2,000 00	
Town of Southboro, four per cent bonds, maturing Mar. 25, 1888	2,000 00	
Town of Southboro, four per cent bonds, maturing Mar. 25, 1890	6,000 00	
Town of Hyde Park, four per cent bonds maturing July 1, 1891	5,000 00	
City of Salem, four per cent bonds, maturing July 1, 1892	17,000 00	
City of Fall River, four per cent bonds, maturing May 1, 1895	9,000 00	
Town of Arlington, five per cent bonds maturing July 1, 1898	30,000 00	
City of Boston, four per cent bonds, maturing Jan. 1, 1899	50,000 00	
Town of Pawtucket, five per cent bonds, maturing April 1, 1899	25,000 00	
City of Providence, 4½ per cent bonds maturing June 1, 1899	21,000 00	
Amounts carried forward	$167,000 00	$589,500 00

Amounts brought forward	$167,000 00	$589,500,00
City of Boston, four per cent bonds, maturing April 1, 1900	4,000 00	
City of Fall River, four per cent bonds, maturing Aug. 1, 1900	13,000 00	
City of Cleveland, O., $3\frac{65}{100}$ per cent bonds, maturing Sept. 1, 1902	3,000 00	
City of Lawrence, four per cent bonds, maturing July 1, 1904	18,000 00	
City of Providence, five per cent bonds, maturing July 1, 1906	50,000 00	
Town of Winchester, four per cent bonds, maturing May 1, 1908	10,000 00	
Town of Beverly, four per cent bonds, maturing July 1, 1911	20,000 00	
		$285,000 00
		$874,500 00
Cash in first National Bank of Cambridge		17,505 97
		$892.005 97

The fund is now earning an average rate of about $4\frac{1}{2}$ per cent.

The bonded water debt, which the foregoing fund is expected to pay, matures as follows, viz:—

April 1, 1887, six per cent coupon	$150,000 00
April 1, 1888, six per cent coupon	175,000 00
May 1, 1889, six per cent coupon	112,000 00
July 1, 1890, six per cent coupon	60,000 00
May 1, 1891, six per cent coupon	50,000 00
July 1, 1892, six per cent coupon	335,000 00
April 1, 1894, six per cent coupon	150,000 00
Nov. 1, 1894, four per cent coupon	36,000 00
April 1, 1895, six per cent coupon	160,000 00
April 1, 1896, $3\frac{1}{2}$ per cent registered (or at option of City April 1, 1911)	100,000 00
July 1, 1896, six per cent coupon	103,000 00
July 1, 1896, $3\frac{1}{2}$ per cent registered (or at option of City July 1, 1911)	75,000 00
July 1, 1897, six per cent coupon	16,000 00
July 1, 1898, five per cent registered	12,500 00
Nov. 1, 1906, $3\frac{1}{2}$ per cent registered	43,000 00
May 1, 1910, four per cent ($155,000.00 coupon, $133,000.00 registered)	288,000 00
	$1,865,500 00

The features of the year have been the payment of $100,000.00 of six per cent water bonds which matured July 2, 1886, and the changes made in our investments by the sale of certain city and

town bonds, and the purchase from the Finance Committee of the City Council of $175,000.00 of Cambridge Water bonds bearing $3\frac{1}{2}$ interest, issued during the year just closed. These bonds just issued are not due until the year 1911, unless the City Council should deem it advantageous for the City to pay them earlier, in which event they can be paid any time after 1896.

Notwithstanding $100,000.00 of water bonds have been paid during the year, this fund is larger by over $17,000.00 than it was at the beginning of the year. The net water debt at this date is $973,494.03.

WM. E. RUSSELL,
JOHN H. CORCORAN,
WM. W. DALLINGER,
} *Trustees of the Sinking Fund of the Cambridge Water Works.*

REPORT

OF THE

TRUSTEES OF THE DOWSE INSTITUTE.

CAMBRIDGE, MASS., NOV. 30, 1886.

To the Honorable City Council of Cambridge :—

THE Board of Trustees of the Dowse Institute respectfully transmits an attested copy of the accounts of the treasurer, showing the exact amount of receipts and expenditures to date.

A course of scientific and literary lectures and entertainments, of the highest character, for the present season was begun on the 9th instant and will close January 4.

W. W. WELLINGTON,
FRANK A. ALLEN,
W. A. BULLARD,
WM. E. RUSSELL,
JOHN H. CORCORAN,
} *Board of Trustees.*

REPORT

OF THE

TRUSTEES OF THE BRIDGE CHARITABLE FUND.

To the Honorable City Council:—

THE trustees of the Bridge Charitable Fund respectfully submit the tenth annual report concerning said fund.

The amount of the fund to Jan. 19, 1886, was	$2,223 93
Add interest to Jan. 19, 1887	89 82
Amount of fund, as of Jan. 19, 1887	$2,313 75

As has been stated repeatedly in reports of previous years, two-thirds of the annually accruing interest on this fund is payable to the Overseers of the poor, and the remaining third is to be added to the principal forever. By the report of the trustees of the year 1885, it appeared that at the close of that year there was due to the Overseers of the Poor, the sum of $57.56. The said sum was not paid over, and is included in the amount of the fund as hereinbefore stated. There is, therefore, now due to the overseers the following sums:

Two-thirds interest accumulation of 1885	$57 56
Two-thirds interest accumulation of 1886	59 88
Total due Overseers of the Poor to Jan. 19, 1887	$117 44
The amount on deposit as of Jan. 19, 1886 is	$2,313 75
Less amount of interest due Overseers of the poor	117 44
Actual amount of fund	$2,196 31

The sum representing the fund remains on deposit at the Cambridgeport Savings Bank.

But little can be added to the foregoing statements concerning the fund, that has not already been given in former reports. The history of the fund is interesting in its details, and has been fully given from time to time in these reports.

WM. E. RUSSELL,
JOHN H. CORCORAN,
GEO. A. ALLISON,
} *Trustees.*

REPORT

OF THE

TRUSTEES OF THE SANDERS TEMPERANCE FUND.

To the Honorable City Council: — The Trustees of the Sanders Temperance Fund herewith present the twenty-first annual report in relation to the fund.

The board has found little to do beyond the reviewal from time to time of the work of the Missionary appointed under the provisions of the Sanders bequest, and to approve the quarterly bills for the services rendered by him. The present Missionary of this fund, Mr. Alonzo Stewart, whom this board has continued in office, has worthily filled the position for many years. His entire time is devoted to the duties pertaining thereto, which his earnestness in behalf of the cause of Temperance, have rendered exacting and laborious. The board is convinced that his efforts have tended largely towards producing the good results desired by the donor of the fund.

The fund is represented by an authorized note of the City Treasurer for the sum of $10,000.00, payable to the order of the Trustees. The interest of this note, which was fixed at six per cent per annum, is paid to the Missionary as his salary. The amount of the fund was originally paid into the City Treasury, where it has been held up to the present time, as one of the trust funds of the city.

WM. E. RUSSELL,
JOHN H. CORCORAN,
NATHAN C. LOMBARD,
WARREN IVERS,
JOSEPH A. BALL.
} *Trustees.*

REPORT

OF THE

SANDERS TEMPERANCE FUND MISSIONARY.

CAMBRIDGE, Dec. 30, 1886.

To the Trustees of the Sanders Temperance Fund: —

GENTLEMEN: — Another milestone in life's journey is passed by, and as we turn our gaze backward over the road to catch some glimpse of the harvest resulting from the seeds of kindness scattered along our pathway, we are saddened that so little is apparent: but *Hope* and *Faith* bid us look up to Him from whom cometh our help, and gird ourselves anew for the conflict. In prosecuting my work, I have continued nearly the same line of effort as in former years: if a better way can be suggested, I will gladly adopt it. I have made personal appeals to more than thirteen hundred persons brought before the Court for intemperance and kindred vices, urging them with kind and persuasive voice to abandon their sinful ways; the names of all these can be found in my daily journal.

I have taken pledges of total abstinence from all intoxicants from seventy-three persons brought before the Court for drunkenness. Have been at the House of Correction and conducted religious services and Sabbath School every Sabbath morning in the female department; have solicited and distributed more than thirty-one thousand pages of religious and temperance reading to the inmates of the Almshouse, Jail and House of Correction, and have attended one hundred temperance meetings. In prosecuting the reform work, and in accordance with your wishes, I have attended the Police Court regularly and made personal examination of each case, trying to judge what course would be for the best good of the individual and the community.

My relations with the Court and Police have been exceedingly pleasant during the entire year, for which I tender my sincere

thanks. And now, Gentlemen, let us thank God and take courage, for the day-star of hope appears above the eastern horizon, with the promise that again will be heard the glad tidings, "Peace on earth, good will to man."

This is no vain imagining, for with the magic words, "*No License*," on our city's banner, we can but feel that our childhood's prayer will yet be answered for this our noble city, "Thy kingdom come, thy will be done on *earth* as it is done in *Heaven*."

All of which is respectfully submitted,

ALONZO STEWART,
Temperance City Missionary.

ANNUAL REPORT

OF THE

OVERSEERS OF THE POOR OF CAMBRIDGE.

CAMBRIDGE, Dec. 28, 1886.

To the Honorable the City Council of the City of Cambridge: —

GENTLEMEN: — The board of Overseers of the Poor respectfully submits its annual report for the year ending Nov. 30, 1886.

After eleven years of continuous service as an Overseer of the Poor, George D. Chamberlain declined a reëlection, and Charles Walker was chosen in April last by the City Council for a period of five years. Mr. Chamberlain will long be remembered as a leader in the movement which produced our present system. His earnestness and courage, trained by experience, have been of the greatest value in perfecting the new method and carrying on the work.

In September last, Knowlton S. Chaffee, after a service of four years with this board, being unable to perform the duties of the office on account of failing health, tendered his resignation to the City Council, and it was accepted. His loss will be much felt by the Board, inasmuch as he brought to this work the same public spirit and business ability which have characterized his labors in other branches of public service for so many years. Henry A. Doherty was chosen to fill the unexpired term of Mr. Chaffee. Dr. Lewis L. Bryant, the assistant City Physician, has made 1775 professional visits to 539 patients outside of the Almshouse since Nov. 30, 1885. Of this number 155 had a legal settlement in this city, and 108 were born in Cambridge. 202 of these 539 patients were males, 337 were females and 183 were children. There have been 18 women attended in childbirth outside of the almshouse; 28 persons have been attended at the police stations, 22 males and 6 females; 8 patients have been sent to the hospital for treatment; 41 persons have been examined relative to insanity, and 34 have been sent to the State lunatic

hospitals; 26 persons in this practice have died outside of the Almshouse.

Under the regulations of the Board all applicants for aid are required to give a statement of their residence, taxes, and also to conform to other requirements by which the legal claim can be determined in every case. There are now 4727 of these histories, embracing 14,181 persons, on file at the office of the Board; 469 of these histories have been taken within the past year, consisting of 1407 persons; 575 males, 832 females, 444 adults, 963 minors; 156 of this number are settled in Cambridge, 95 in other cities and towns, and 218 are State paupers; 57 histories have been revised, under the changes in the pauper laws, within the year.

The number of paupers supported by the city at the various institutions within the past year was as follows: —

City Almshouse	302
State Reform School	4
State Industrial School	2
State Work-house	1
State Lunatic Hospitals	96
Middlesex House of Correction	10
	415

The expenditures for outside aid have been $23,856.54. Of this amount $12,400.74 has been expended for the 96 insane at the State hospitals, embracing 66 at the Danvers Hospital, 14 at the Worcester Lunatic Hospital, 8 at Worcester Chronic Asylum, 5 at the Taunton Lunatic Hospital, 1 at the Tewksbury Insane Asylum, and 2 at the Northampton Lunatic Hospital (33 new cases the present year) who have a legal settlement in Cambridge, against $10,790.18 last year. This is an increase of $1,610.56 in one year in the cost to the City for its insane poor.

This sum would have been much increased but for the 30 cases of the mildly insane class cared for at the Almshouse, after a thorough investigation of their symptoms and condition.

The receipts have been $4,603.74, leaving a net cost of $19,252.80 for the support of the poor outside of the Almshouse.

Almshouse.

Total number of inmates during the year	302
Total number present Nov. 30, 1886	149
Average monthly number	155

The Board are much pleased with the new plan of work provided for the boys in seating chairs. One of the buildings formerly used as a storehouse has been fitted with suitable conveniences, and at the present time every boy is accustomed to work in the chair shop two hours a day. The laborers are zealous in their new duties, and a small revenue at the start, promising an increase hereafter, is the result. The plan is valuable also as affording an occupation which may be beneficial to these boys after they leave the institution.

The new heating apparatus introduced during the present year is a long needed improvement, and is destined to effect a marked change in economical benefit to the city.

A new range of modern pattern and appliances has been placed in the warden's kitchen, affording better facilities for preparing food for the sick of the institution, as well as for the warden's table.

The new cottage on the almshouse grounds is finished and in satisfactory operation.

By the report of the warden, Martin L. Eldridge, it appears that 142 inmates have been admitted during the year, 114 entered on permits from the secretary of the Board, and 28 were sentenced by the court. 9 boys and 2 girls have been committed as neglected children. 17 boys have been sentenced to the Almshouse truant school during the year. The majority of them have been committed for a period of two years by the District Court of Cambridge. Of the 302 inmates present within the year 195 were adults and 107 were minors. There have been 153 discharged, 101 being males and 52 females.

Included in the total number of inmates present Nov. 30, 1886, are 30 of the chronic mildly insane class, 10 of whom are males and 20 females. The plan of accommodating these persons at the Almshouse, after a careful investigation, has been a saving to the city treasury, and has appeared wise in view of the large increase in the number of Cambridge patients supported at the State Lunatic Hospitals. The time is not far distant when Cambridge will be compelled to care for all her insane, who have a legal claim upon her, within her own limits.

The Almshouse school, which has been transferred during the year from the control of the School Committee, to the care of the Overseers of the Poor, has numbered 80 pupils during the year,

and 42 were present at its close. Miss Harriette A. Butler has taught the school since the transfer was made.

The assistant City Physician reports 187 medical visits at the Almshouse to 140 persons, 83 of whom were males and 57 females. There have been 14 deaths at the institution during the year, mostly of chronic diseases, and some of these persons were admitted in the last stages of disease. Fifteen patients were present Nov. 30, 1886 in the Almshouse hospital wards, 6 males, 9 females. One woman has been attended in childbirth during the year at the institution.

The Board asks the attention of the City Council to two suggestions of the assistant City Physician. There is a need of better facilities for transporting the sick from their homes to the Almshouse and the hospitals. They would, therefore, recommend the construction of an ambulance with modern appliances for the comfort of the sick patients. The City also needs a room for the reception of the dead and for *post mortem* examinations.

A schedule of personal property, as presented in detail by the warden, shows a valuation of $12,932.22.

The expenditures for the Almshouse during the year have been $20,448.19, and the receipts have been $908.36, leaving a net cost of $19,539.83.

Farm and Ledge.

The City farm has been more extensively cultivated than usual during the year, and with eminently satisfactory results, producing a large revenue for the City after supplying the wants of the inmates of the Almshouse.

Two men have been regularly employed on the quarry, and the male inmates of the Almshouse have also labored there, when not otherwise employed. Owing to the large demand for stone, the force of employés has been increased during a part of the year. The custom of requiring all able-bodied male persons applying for aid to work on the ledge in return for assistance received from the city has been pursued with successful results. Thirty-two men of this class have worked 844 days within the past year.

The expenditures for the farm and ledge have been during the past year $3,270.29, and the receipts have been $6,446.34, leaving an excess of receipts above expenditures of $3,176.05.

House Offal.

The Overseers have continued their voluntary charge of this department during the year. But inasmuch as this is in no way a part of their duty in the care of the poor, the expenditures for this business of collecting offal must be considered the same as if it were an independent department of itself. On Nov. 30 there were twenty-two men on the list of employés in this department.

The expenditures during the year have been $14,931.84, and the receipts have been $6,951.23. The net cost for the collection of city offal has been $7,980.61, an increase of $1,793.29 over last year.

Recapitulation.

Total expenditures, outside aid	$23,856 54
Total receipts	4,603 74
Net cost	$19,252 80
Total expenditures, Almshouse, Farm and Ledge	$23,718 48
Total receipts	7,354 70
Net Cost	$16,363 78
Total expenditures, exclusive of house offal	$47,575 02
Total receipts	11,958 44
Net Cost of care of the Poor	$35,616 58

Respectfully submitted,

WM. E. RUSSELL,
CHAS. E. VAUGHAN,
SUMNER ALBEE,
MICHAEL CORCORAN,
CHARLES WALKER,
HENRY A. DOHERTY,
Overseers of the Poor.

CITY CLERK'S ACCOUNT OF FEES AND LICENSES.

CAMBRIDGE, Dec., 29. 1886.

To the Honorable the City Council:—

I herewith submit an account of the sums received for Fees and Licenses, during the year ending Nov. 30, 1886, all of which have been paid to the City Treasurer:—

Liquor Licenses	$337 00
Auctioneer's Licenses	20 00
Bowling Alley Licenses	2 00
Billiards, etc.	134 00
Wagon Stands	22 00
Intelligence Offices	16 00
Junk stores	20 00
Pawnbrokers	10 00
Carriages	5 00
Junk Licenses	150 00
Recording Mortgages, &c.	473 50
Marriage certificates	291 50
	$1,481 00

Respectfully submitted,

JUSTIN A. JACOBS,

City Clerk.

CITY TREASURER'S FEES

FOR YEAR ENDING NOV. 30, 1886.

To the Honorable the City Council: —

I have the honor to report that the fees received by me as City Treasurer and Collector of Taxes during the financial year ending Nov. 30, 1886 have been $881.90, divided as follows, viz: —

From Summonses	$577	82
From advertising Real Estate	51	10
From preparing Advertisements	91	00
From posting Notices of Sale	48	90
From Poundage on Personal Taxes	1	08
From Making Collectors' Deeds	112	00
	$881	90

The aforesaid amount has been paid into the City Treasury in conformity to ordinance.

Very respectfully,

WM. W. DALLINGER, *City Treasurer.*

ANNUAL REPORT

OF THE

TRUSTEES OF THE PUBLIC LIBRARY.

To the City Council of Cambridge: —

THE Trustees have the honor to present their Annual Report, being the twenty-ninth since the opening of the library, and the eighth under the title of the Cambridge Public Library.

Under an ordinance of the city, the Trustees are required to present to the City Council annually "such information or suggestions as they may deem desirable." Appended hereto, and forming part of this report, is the report of our faithful and competent Librarian, giving all needed information relating to the library. You will note the slight decrease in the circulation of books. This has seldom occurred in any year, and is perhaps in part owing to the causes hereinafter alluded to, and not from any decrease in the public estimation. The number of books added is also given, including those obtained by purchase and gift. For the latter the donors have our thanks, and we wish that their example might become more contagious.

Last year we received an appropriation of two thousand dollars for a new Catalogue. We have undertaken this important work, and made good progress towards completion. The compiling of such a book is a laborious matter, requiring special talent and much supervision. We contracted with responsible parties, and expect the full completion of the Catalogue by the 1st of March next. We have expended only $403.60 of the appropriation, leaving an unexpended balance of $1596.40.

The Librarian urges the necessity of a new library building. This consideration has been presented to the City Council in every report for the last half-dozen years. In the mean time large yearly additions have been placed on our shelves, until our

rooms are full, and cannot possibly contain more without breaking up our classification. The accommodations for the patrons are insufficient and inconvenient. The prosperity and progress of our institution demand a separate building. We are hidden away in such obscure quarters that multitudes of our citizens are ignorant of our very existence. Seldom are we visited by a resident of Ward 3 or Ward 5. Had we a suitable building in some conspicuous locality, our library would soon become so well known and advertised that our people would be attracted to it, and take a just pride in it. Can we wonder that we receive no more gifts or legacies, when so little is done by the city to make our library appreciated and popular? Such municipalities as Brookline, Concord, Chelsea, Newton, Somerville, Watertown, Woburn, and many others, have fine library buildings. Their citizens are proud of them, and they flourish, and in time increase the reputation of the places where they are established. Such libraries will never lack endowment.

Surely our city, the second in wealth in the State, ought not to be thus outstripped in this great department of human improvement. Since its foundation, our library has been built up from the treasury of the city (with the exception of the interest from the Fay legacy of $1,000), and it now numbers 18,372 volumes. Our city deserves great praise for this useful work; but the time has now come for a step forward, in order that we may not lose the benefit of what has been done *in the past*, and may secure the greatest good *for the future*.

The Trustees would ask for the sum of two thousand dollars for the type-setting, printing, and binding of the Catalogue, — the same as last year. The $403.60 expended for the purpose this year was hardly sufficient to cover the cost of *preparing* the work for the printers. They also ask for the further sum of six thousand five hundred dollars for the supply of books and the current expenses of the library for 1887; making a total of eight thousand five hundred dollars.

The following is a report of the appropriations and expenditures: —

Amount appropriated for Library $6,500.00

Expenditures.

Salaries, — librarian, assistants, janitors, etc. . . .	$2,474.23	
Books, $1,528.38; Periodicals, $209.88	1,738.26	
Rent of room, including heating	1,000.00	
Binding and repairs on books	458.40	
Gas, $272.92; Water-rates and ice, $19.00 . . .	291.92	
Printing, $134.11; Stationery and supplies, $55.49 .	189.60	
Furniture, repairs, etc.	48.96	
New book-case	53.00	
Insurance on Library	231.00	
Petty expenses, expressages, etc.	4.50	
		$6,489.87
Unexpended balance		$10.13

Amount appropriated for printing and binding new Catalogue $2,000.00
Expended for preparation of copy for printers 403.60

Unexpended balance $1,596.40

Respectfully submitted,

SAMUEL L. MONTAGUE,
EDWARD R. COGSWELL,
JABEZ A. SAWYER,
HENRY H. GILMORE,
JOSEPH J. KELLEY,
EDGAR R. CHAMPLIN,
CHARLES WALKER,

Trustees of the Cambridge Public Library.

LIBRARIAN'S ANNUAL REPORT.

To the Trustees of the Cambridge Public Library:—

GENTLEMEN:—In presenting her thirteenth annual report the librarian finds it a pleasant duty to congratulate the Trustees on the near completion of the new catalogue of the library. This will add to the usefulness of the library in many ways. Its valuable stores of information will now be accessible and those readers who have lost time and patience over our numerous lists, will appreciate the ease and rapidity with which they will be able to find what they want.

The new catalogue follows the usual dictionary plan of one alphabetical list, each book, when possible, appearing twice; under the author's surname, and under its title or subject. The subject entries are confined to such as seemed indispensable, a list of them appearing in the introduction to the catalogue.

The library is particularly well supplied with works of history, these appearing in the catalogue under the country of which they treat. Of English history alone, the library contains more than two hundred volumes.

During the past year several very important additions have been made to the Reference Library, which is becoming a more and more valued department. To the purchase of standard works of this character, you have wisely devoted the income of our only invested fund, the Fay legacy. It is to be regretted that we have not a larger amount available for this purpose, since the annual city appropriation will not more than meet our expenses, and the demand for current literature.

The number of new books bought during the past year is 808.

Three hundred and sixty-eight old ones worn out by constant use, have been replaced. This latter item of expense is no small one, and has been unusually large this year. So large a percentage of our circulation is confined to works of fiction and juvenile literature that these volumes are soon worn out.

Before preparing the new catalogue, it became necessary to replace an unusual number of books. Some, which were worn

out, were found to be out of print and could not be obtained. In 1881 about two hundred volumes were examined with reference to their moral influence, and a report made to the Trustees as to their character. Of these, forty-eight were withdrawn, and since that time other books have been condemned for similar reasons. The nearly five hundred volumes of the Franklin Square library were considered of too transient value to be included in the new catalogue, and these, with those previously mentioned, make the entire number withdrawn 614, leaving the present number of the library 18,372.

The relation between the library and our public schools has always been a friendly one and it is the wish of the Trustees to make the library a means of instruction to all who will avail themselves of its privileges. If our limited accommodations afforded a quiet well-lighted reading-room where teachers and students could consult at leisure our books of reference, or spend an hour in studying all the library contains upon a given subject, the real use and value of a free library would soon be better understood.

Too many children and young persons now read only for amusement, many skimming, not properly reading six books a week. The influence of such superficial reading, upon a child's mental power in after years, should be thoughtfully considered by parents as well as teachers. The list of books for children prepared by our Superintendent of Public Schools, has received the highest praise throughout the country. Many other libraries have bound these lists for their use, changing our shelf numbers for their own.

The crowded condition of our shelves and the fact that the library-room will contain no more cases must again be brought to your notice. Some plan for "enlarging our borders" must be made, or the library must stop growing. We have no room for the purchases which should be made in 1887. Many books are now shelved in dark closets where it is almost impossible to find the book desired, since in many cases there are *three lines of books, one behind another, on the same shelf.* This arrangement was considered a temporary one *five years ago*, and still we are tenants in rooms totally inadequate to our needs.

Since we have occupied these rooms, the library has been made

free, has increased from 7,000 to 18,000 volumes, and has reached an annual circulation of 83,000. Can we not justly demand that the future welfare of the library be generously considered.

The work of the past year is shown by the following tables:—

Books Issued.

First quarter,	22,390	Average per day	300
Second quarter,	21,438	" " "	281
Third quarter,	15,874	" " "	203
Fourth quarter,	18,504	" " "	243
Total for year,	78,206	" " "	257
The issue for 1885 was			83,016

The decrease in circulation is doubtless owing to the need of a new catalogue.

The largest issue for any day, (Feb. 13), 704. This, with one exception, 733 issued Feb. 23, 1878, is the largest in the history of the library. The smallest issue this year was (Sept. 22) 94.

Books Added.

	By purchase.	Gift.	Total.
First quarter,	156	8	164
Second quarter,	169	20	179
Third quarter,	201	11	212
Fourth quarter,	292	8	300
	808	47	855
Present number of the library,			18,372

List of Donors.

Hon. Leopold Morse,	22	Mr. M. M. Ballou,	1
Dr. Morrill Wyman,	1	Rand, Avery Co.,	2
Mr. S. L. Montague,	1	State of Massachusetts,	12
Mr. Robbins Battell,	1	City of Cambridge,	1
Dr. J. L. Hildreth,	1	Parishes of 1st Church,	1
Dr. E. R. Cogswell,	1	United States,	3
			47

Number of postals sent for books overdue,	1,865
Books lost during the year	8
Number of books covered during the year,	10,041
Number bound or repaired,	3,718
Number destroyed because of contagious diseases in the families reading them,	13
Number of new cards issued	1331
Present number of Card-Holders,	8,339

Receipts for Fines and Catalogues.

First quarter	$36 96	
Second quarter . . .	41 89	
Third quarter . . .	35 97	(including $6.50 for catalogues).
Fourth quarter . . .	33 76	
	$148 58	

The City Treasurer's receipts for these amounts have been submitted with the quarterly reports.

The Reading room is still popular and whenever any subject appeals to the public interest is sure to be well filled.

The present and future want of the library is comprehended in the words *more room.*

All of which is most respectfully submitted.

ALMIRA L. HAYWARD,
Librarian.

REPORT

OF THE

JOINT STANDING COMMITTEE ON PUBLIC PROPERTY.

THIS committee has performed a work during the past year, not less laborious and exacting in its demands upon the attention of the committee, than that of the year 1885. Some of the matters placed under its supervision, were the following:

1. The completion of the Webster School-house enlargement.
2. The completion of the work upon the Latin School-building on Lee street.
3. The erection and completion of a primary school-house on Jefferson street.
4. The enlargement of the Wyman School-house on Spruce street.
5. The setting of new boilers and improved heating apparatus at the Almshouse, and the enlargement of the boiler-house.
6. The building of a brick vault at the City Hall for the City records.
7. The construction of improved water-closets at the Allston School-house. This last work is not yet finished and must go over to the new year.

Other important improvements and repairs have been made at the various city buildings, engine houses and police stations, all of which have demanded careful attention to minute and numerous details.

The committee deems it a fortunate circumstance, that in the exercise of its functions during the past year, it has been able to avail itself largely, of the valuable advice and assistance of the Superintendent of Public Buildings. The offices of Inspector of Buildings, and Superintendent of Public Buildings, both

of which are held by the same person, Mr. Benjamin H. Steele, were created by an ordinance adopted in the year 1885. To these positions the present incumbent was appointed early in the year, and since his appointment he has devoted much of his time to looking after the care and repairs of the various city buildings. In his office has been kept an itemized account of the expense for care and maintenance of every public building, and together with the committee he has thoroughly examined each building, with reference to such repairs as may be needed during the next year. While it is not to be expected that the establishment of the office of Superintendent of Public Buildings will wholly lift the responsibility from the members of this committee, with reference to the trusts committed to its charge, there are nevertheless many details of work from which it may in future be partially relieved. Such repairs as may be thought necessary upon the various city buildings during the coming year, will be suggested and recommended by the Superintendent of Public Buildings in his annual report.

Following is a statement of the expenditures under various heads of appropriations, approved by this committee to Dec. 1, 1886, and by the committee of the previous year, for the month of December 1885, it being the period included in the financial year of 1886.

Appropriations.

City Buildings, (care and repairs):—		
City Hall (including fuel)	$3,845 95	
City Building, Brattle Sq., including fuel	3,716 83	
City Building, Central Sq., including fuel	3,623 82	
Ward rooms 3 and 5, water and gas	31 28	
		$11,217 88
Fire Department:—		
Engine House No. 2	$86 10	
Engine House No. 3	16 35	
Engine House No. 4	416 82	
Engine House No. 5	99 77	
Hook and Ladder House No. 1	309 34	
Hook and Ladder House No. 2	22 23	
Repairs of damage by fire alarm wire	3 98	
		$954 59
Amount carried forward		$12,172 47

Amount brought forward		$12,172 47
Incidental expenses:—		
Care of public clocks	$199 14	
Ringing bells at 12 noon and 9 P. M.	94 00	
Election expenses, fitting up polling places, etc, ...	193 48	
Rent of ward rooms	190 00	
Repairs on rifle range	59 53	
Water for drinking fountains	600 00	
Repairs on drain, Engine House, and Police Station on North Avenue	259 93	
Vault at City Hall	1,530 00	
Horse, Buggy, Harness, etc. for Superintendent of Public Buildings	484 50	
Boarding and shoeing horse, Superintendent Public Buildings	238 91	
Care of ward rooms	56 00	
Care of fires, Police Station and Engine House Ward 3	40 00	
Land on Pleasant Street adjoining City Hall	2,284 50	
Miscellaneous	188 93	
		$6,418 92
Pauper department (Almshouse):—		
Almshouse cottage, balance contract . . .	$1,190 00	
New boilers at almshouse	1,676 57	
Enlarging boiler-house at almshouse . . .	1,104 50	
Repairs on gutters at almshouse	20 00	
		$3,991 07
Police Department, repairs and furnishing stations:—		
Station 1	$217 17	
Station 2	19 00	
Station 3	239 98	
Station 5	43 50	
		$519 65
School-houses (care and repairs) :—		
Fuel and weighing (approved by Committee on Fuel)	$6,878 99	
Gas	276 04	
Janitors	11,865 33	
Repairs and furnishing	9,502 89	
Supplies and sundry expenses	1,704 88	
Water	704 45	
		$30,932 58
Amount carried forward		$54,034 69

Amount brought forward		$54,034 69
School-houses (new and furniture):—		
New High school-house		$9,678 18
New Webster school-house		9,113 93
New Wyman school-house		3,876 65
New Gannett school-house		12,963 92
Evening schools, janitors, etc.		150 75
Evening Drawing schools, janitors, etc.		65 95
		$89,884 07
Less items for fuel :— (Approved by the Committee on Fuel.)		
City Hall	$243 91	
City Building, Brattle Square	432 90	
City Building, Central Square	513 45	
School-houses	6,850 49	
		$8,040 75
Leaving amount of bills approved by this committee		$81,843 32

The items for fuel are given in the foregoing, in order to show the total cost of maintenance of the several buildings, but are deducted from the aggregate to show the amount of bills approved by this committee. All fuel is contracted for by the Committee on Fuel, and the bills therefor are approved by that committee.

The amount of bills approved by the Committee on Public Property in 1886 was	$81,843 32
Bills approved in 1885	56,954 58
Increase in 1886	$24,888 74

City Buildings.

The expenditures in and upon the City Hall building in the year 1886 were as follows:—

For Fuel	$243 91	
Gas	353 77	
Janitor	1,200 00	
Extra cleaning	555 85	
Water	84 50	
Repairs, heating apparatus	304 98	
General repairs	359 51	
Furnishing and repairs	314 24	
Miscellaneous	429 19	
		$3,845 95
In 1885 the cost was		3,413 24
Increase		$432 71

The aggregate given above shows an increased expenditure over the figures of the last year's report, but the increase does not call for any apology, as the City Hall is far from being a new structure, and only the most constant watchfulness can keep the building in proper repair. The vault for the city records, which subject has been under consideration for the past two years, was built during the summer of 1886, and will be ready for occupancy as soon as it is furnished with proper shelving. The cost thus far has been as follows: —

Contract for building	$1,390 00	
Patent iron doors	140 00	
Total		$1,530 00

This sum was not charged to the City Hall account, but was carried to the appropriation for Incidental expenses. The work of putting in suitable shelves will add slightly to the above figures.

The cost of maintenance of the City Building, Brattle Square in 1886, was as follows:—

For Fuel	$432 90	
Gas	560 50	
Janitor	1,230 00	
New grates under boilers	115 34	
General repairs	920 06	
Miscellaneous furnishing	119 42	
Total		$3,623 82
The cost in 1885 was	$4,287 24	
The cost in 1886 was	3,623 82	
Decrease in 1886	663 42	

Nearly all of this building is now used for various city purposes, although there is a revenue to the city treasury derived from the leasing of the Armory, the District Court room and two of the rooms formerly used by Engine Company No. 1.

The cost of Central Square building in 1886, was as follows:—

For Fuel	$513 45
Gas	262 52
Janitor	1,180 00
Repairs in Armory	1,144 28
Amount carried forward	$3,100 25

Amount brought forward	$3,100 25	
General repairs and furnishing	208 79	
Water	210 60	
Miscellaneous	197 19	
		$3,716 83
The cost in 1885 was		2,653 95
Increase		$1,064 88

The repairs made in the Armory in this building were authorized by an order of the last City Council and the contract for the work was awarded by the last year's committee, in the month of December.

The contracts were awarded as follows:—

Benj. D. Foss, carpenter work	$522 50	
Martin A. Feeley, painting	275 00	
Martin A. Feeley, finish on wood work	250 00	
		$1,047 50

The work called for by the above mentioned contracts was all completed and paid for and in addition thereto a new chandelier and globes were put in at a cost of $56.89. Other slight repairs increased the expense upon the Armory to the sum of $1,144.28. It will be seen by reference to the comparison of figures of the years 1885 and 1886, relating to the maintenance of this building, that the general care and repairs exclusive of the repairs upon the Armory, were about the same during the year 1886 as in the previous years.

The amount expended for care and repairs of the several city buildings:—

In 1886 was	$11,217 88	
In 1885 it was	10,392 17	
Increase in 1886		$825 71
The amount appropriated was		$11,000 00
Additional appropriation		300 00
Total		$11,300 00
Amount expended		11,217 88
Balance unexpended		$82 12

Fire Department.

The outlay for repairs upon the different engine-houses has been considerably less than in the year 1885, comparative figures being given below:—

Expended in 1885	$1,402 35
Expended in 1886	954 59
Decrease in 1886	$447 76

Nearly half of this expense was for alterations and repairs at Engine House No. 4 on North Avenue. A new manure pit was built in the cellar at a cost of $139.83 and extensive refitting was done in the rooms used by the firemen.

Incidental Expenses.

The committee has given attention to a large number of miscellaneous details, in connection with its general supervision of city property, such details being chargeable to the appropriation above mentioned. All public clocks, though not the property of the city, are kept in repair and in running condition at the city's expense, and are in charge of the Committee on Public Property.

The preparation of the various polling places for the state and city election, is also so cared for.

By an order of the City Council the committee was directed to construct drainage for the Police station and Engine house on North Avenue. This work was done at a cost of $259.93 and the same charged to Incidental Expenses. It was also found necessary to remove the flag-staff on the little common near Harvard Square, the same being in an unsafe condition. A contract was made with Young, Caldwell and Odiorne of Boston, for a new flag-staff and it has been erected and made ready for use. The cost, which will be about $300.00. will be chargeable in this account of the next year.

Negotiations for the purchase of a lot of land on Pleasant street adjoining the City Hall, were begun by this committee, by authority of the City Council, early in the year. After considerable delay the purchase has been completed, and the title of the land has passed to the city. The lot contains a frontage of thirty feet extending easterly from Pleasant street about ninety feet. The cost of this land was $2,284.50. The outlay therefor is deemed a judicious expenditure, in view of the possibility that

any other purchaser might have erected a building thereon, which would have effectually darkened the windows on the south side of the City Hall.

Pauper Department (Almshouse).

Under the supervision of this committee the almshouse cottage which was begun in the year 1885, was finished and ready for use early in the summer. The amount paid therefor, from this year's appropriations was $1,190.00,—the entire cost including plans obtained by the Overseers of the Poor was $1,830.00.

The steam-heating apparatus at the almshouse was repaired, new boilers replacing the old ones that had been long in use, and which were ineffective, in regard to heating the building properly. The change in the boilers required an enlargement of the boiler house, which work was also done. The contract for the boilers was awarded to Wm. Campbell and Co., for $1,570.00, and that for work on the boiler house to M. N. Stearns for the sum of $1,045.00. The entire work appears to have been completed in the most satisfactory manner.

Police.

The committee has given attention to repairs upon the several police stations, the greater part of the expenditure under this head having been made at Stations One and Three. The old police station on Main street near West Boston Bridge was sold at auction in April last, and the proceeds turned into the treasury.

School-Houses.

There were appropriated under this head in the year 1886, the sums stated below, the first column showing the appropriations as originally made, and the second being the final modification thereof by additions and transfers.

	Originally appropriated.	As afterwards changed.
School-houses (care and repairs)	$34,000 00	$32,700 00
New High school, (new and furniture) .	9,400 00	9,700 00
Webster school (new and furniture) . .	9,000 00	9,125 00
(New and furniture additional)	4,000 00	4,050 00
(New and furniture in Ward 2.)	10,000 00	13,825 00
Total	$66,400 00	$69,400 00

As stated in the report of the committee of 1885, the Lee street church property was purchased for the Latin School for the sum of $6,500.00, and the contract for remodelling the church building into a school-house, was awarded to Mr. John Quin for the sum of $6,000. He completed the work on his contract in the month of February, and the building was occupied immediately afterwards.

The total cost of this school-house was as follows: —

Land and buildings purchased in 1885	$6,500 00
John Quin, carpenter, contract and extras	6,564 48
Blackboards	116 20
Coal	49 17
Clocks	30 00
Desks, moving and putting down same	47 60
Electric bells and speaking tubes	98 00
Furnaces, and extra work around furnaces	554 82
Grading yard	17 00
Ink wells	399 69
Mats	20 90
Plans and specifications	300 00
Plumbing, contract, superintendence and extras	1,338 67
Sink for chemical room	44 68
Water supply	19 35
Window shades	50 23
Miscellaneous	6 21
Total cost of school-house and furnishing	$16,178 18
Amount originally appropriated in 1885	15,000 00
Cost above original estimate	1,178 18
The amount appropriated for the completion of this building was	$9,400 00
Additional	300 00
	$9,700 00
Amount expended	9,678 18
Balance unexpended	$21 82

Reference was made in the report of the last year's committee to the then unfinished condition of the Webster school-house enlargement, owing to the failure of the contractor, and his abandonment of the job. Contracts for the completion of the building were made by that committee as follows: —

Carpenter and other work except furnaces	$5,060 00
Furnaces	910 00
	$5,970 00

Inasmuch as the unexpended balance of the sum appropriated for this school-house was but $4,840.00,—the committee secured an additional appropriation of $2,000.00 late in the month of December, immediately prior to closing the above mentioned contracts. The work then went forward to the new year, and under the direction of this committee the building was at length finished and was ready for occupancy about the middle of April last, although the job was not accepted by the committee until about June 1.

The entire cost of the Webster school-house enlargement was as follows:—

Amount expended to Dec. 1, 1885			$11,421 30
Expended in 1886.			
W. W. Tobey, contractor	5,060 00		
Extra work	219 68		
		$5,279 68	
Clark and Crawford, plumbing		1,227 39	
James Fogarty, plans, etc.		400 00	
Clocks		30 00	
Desks, furniture and repairs		761 25	
Electric bells and speaking tubes		167 20	
Furnaces and extra work		947 92	
Gas piping		13 90	
Mason work		43 00	
Mats		41 87	
Window pulleys		27 30	
Window shades		90 00	
Miscellaneous		84 42	
			$9,113 93
Total cost of the Webster school-house enlargement			$20,535 23
The amount appropriated in 1886, for finishing the job upon this building was			$9,000 00
Subsequent addition by transfer			125 00
			$9,125 00
Amount expended			9,113 93
Balance unexpended			$11 07

An urgent call from the School Committee for additional school accommodations in Ward Five, and also in the easterly portion of Ward Two, was met by special appropriations, for each of the

districts above mentioned. A proposed plan for the enlargement of the Wyman School-house on Spruce Street, was approved by the School Board, and in accordance therewith a contract was made for the building of two additional rooms to said school-house. Proposals were received for this job, and the contract was awarded to Mr. John Quin, for the sum of $3,325.00, he being the lowest bidder.

The amount appropriated was	$4,050 00

Expended.

John Quin's contract	$3,325 00	
John Quin's extra work	37 54	
J. Fogarty, plans, etc.	82 00	
Furnace work	210 00	
Furniture	138 23	
Blackboards	38 35	
Clocks	8 00	
Piping	13 53	
Window shades	24 00	
Total expenditure		$3,876 65
Leaving a balance unexpended of		$173 35

An appropriation having been made for a primary school-house in Ward Two, and a portion of the city land on Jefferson Street, having previously been selected as a site for the building, the committee was authorized to contract for the same. Mr. John Quin, to whom was awarded the job of building the Wyman school-house additions, was the lowest of seven bidders, and to him the contract was awarded for the sum of $10,300.00. The building was to be of wood and constructed in accordance with plans and specifications by George A. Moore, architect of this city. The entire job was completed and the building occupied about the first of October.

The amount originally appropriated for the new school-house on Jefferson Street, Ward Two

Was	$10,000 00
Additional appropriations	4,000 00
	$14,000 00
Amount transferred	175 00
Balance	$13,825 00

Expended.

John Quin, contract	$10,300 00	
Advertising for proposals	3 75	
Ashes for filling	61 75	
Blackboards	73 25	
Copper-pipe	200 00	
Clocks	20 00	
Cleaning cellar	2 00	
Extra work by contractor	88 13	
Furnaces	920 00	
Furniture	448 30	
Gong	6 50	
Grading yard	238 00	
Mats	21 65	
Plans and specifications	401 59	
Putting down desks, etc.	47 25	
Teaming furniture	9 75	
Window shades	52 00	
Ventilators	70 00	
Total		$12,963 92
Leaving a balance unexpended of		$861 08

In the foregoing details of the cost of the new school-house on Jefferson Street it should be noted that the value of the land taken for the purpose is not included in the aggregate given.

The building was erected on a lot containing an area of about 10,000 square feet, and constitutes about one-half of a parcel of land surrendered to the city in 1876 on account of low-land filling. The city paid about $10,000.00 for the entire lot, or an average of about fifty cents per square foot, but inasmuch as land in the vicinity of Jefferson Street has lately been sold at the rate of fifteen cents and less, per square foot, the value of the school-house lot may be estimated at about $1,500.00, which sum added to the cost of the building and other attendant expenses, would make the entire expense in connection with this school-house, about $14,500.00.

The appropriation for school-houses (care and repairs) as recommended by the Committee on Finance, and subsequently adopted was	$34,000 00
From this amount there was transferred the sum of	1,300 00
Making the appropriation stand at	$32,700 00

Expenditures.

	1885.	1886.
Blackboards	$257 59	$934 64
Fuel	7,246 74	6,878 99
Furniture and repairs	511 20	770 87
Gas	330 63	276 04
Gravel, grading and paving	139 08	24 00
Hardware and tools	316 98	596 91
Heating apparatus and repairs	1,520 73	1,997 91
Janitors	11,221 92	11,865 38
Repairs of buildings, fences and lumber	8,644 72	5,646 31
Supplies, miscellaneous	732 87	837 94
Sundry expenses	872 26	399 19
Water	866 30	704 45
	$32,661 02	$30,932 58

The cost of repairs and supplies in all the school-houses, exclusive of the items of fuel, gas, water and janitors, was $11,207.77.

For school-houses, care and repairs, there was appropriated the sum of	$32,700 00
Amount expended	30,932 58
Balance unexpended	$1,767 42
The amount expended in 1885 was	32,661 02
The amount expended in 1886 was	30,932 58
Decrease	$1,728 44

The matter of constructing improved water-closets at the Allston School-house was under the consideration of the committee early in the year. The sum of $2,000.00 was authorized to be expended for the purpose, this being the estimate of the cost of the improvements to be made. The buildings required, were originally designed to be of brick, and located in the school-house yard. Proposals were received for the work, the lowest bid being $2,666.00, a sum so much in excess of the amount authorized, that it became necessary either to ask for more money, or to make such changes in the plans as would reduce the probable cost. The latter course was adopted and the plans were so changed as to provide for putting new water-closets into the cellar under the Allston School building. Proposals were again

asked for and Mr. John K. James was the lowest bidder, his figures being $2,231.00, and a further appropriation of the sum of $500.00 having been authorized for the purpose, by the City Council, the contract was subsequently awarded to Mr. James. The work is now going forward as rapidly as possible.

The subject of steam-heating for the Washington School-house was before the committee at the beginning of the year, and was ultimately referred by the City Council to the Committee on Finance, which considered the question in connection with that of the proposed new boilers at the Almshouse, and finally recommended the latter, on the ground of the greater necessity.

In the judgment of this committee the change from furnaces to steam-heating apparatus in this school-house should be made during the coming year, not only on the ground of economy in respect of fuel, but also for the better security against danger from fire, which has already resulted from the present heating arrangement in this building.

The committee has examined all school-houses, and their respective surroundings, in connection with the Superintendent of Public Buildings, and such repairs as have been adjudged necessary in the several buildings have been noted by him.

In his last report attention is called to the work required during the year 1887.

The cost of maintenance of each school-house is shown in the following tables, the same being classified under the several headings. The items of gas and water are included under the general head of furniture and supplies.

Maintenance of School-Houses.

Names,	Fuel.	Furniture and Supplies.	General Repairs.	Janitor.	Total.
English High	$262 20	$12 00	$940 25	850 00	$2,064 45
Latin	238 44	61 33	175 74	381 93	857 44
Allston Grammar	270 60	85 34	175 44	500 01	1,031 39
Corlett Grammar	21 14	13 00	301 47	225 00	560 61
Harvard Grammar	407 22	178 30	304 14	700 00	1,589 66
Putnam Grammar	242 85	64 05	125 13	300 00	732 03
Shepard Grammar	206 35	234 68	271 17	500 00	1,212 20
Thorndike Grammar	360 00	78 85	296 12	500 03	1,235 00
Washington Grammar	381 75	232 99	385 28	500 00	1,500 02
Webster Grammar	655 35	150 34	558 05	750 00	2,113 74
Wellington Grammar	362 35	39 06	235 28	301 25	937 94
Agassiz Primary	259 32	159 25	219 83	500 07	1,138 47
Boardman Primary	271 80	63 79	275 05	225 00	835 64
Bridge Primary	33 80	13 00	79 52	100 00	226 32
Cushing Primary	58 70	13 00	250 59	225 00	547 29
Dana Primary	89 40	41 40	337 28	225 00	693 08
Dunster Primary	119 63	13 00	95 59	300 00	528 22
Felton Primary	113 55	50 99	102 48	225 00	492 02
Gannett Primary, (old building)	123 25	48 75	496 43	301 25	969 68
Gannett Primary (new, Jefferson St.)	165 11	46 07		64 16	275 34
Gore	297 75	66 42	685 48	500 00	1,549 65
Holmes	135 30	14 72	317 75	300 00	767 77
Lassell	135 30	13 50	94 61	300 00	543 41
Lowell	200 91	25 15	142 13	250 00	618 19
Mason	94 59	13 00	153 34	225 00	485 93
Otis	135 30	32 76	455 16	249 97	873 19
Quincy	91 00	27 20	76 52	250 00	444 72
Reed	130 50	28 35	117 10	300 00	575 95
Riverside	117 55	13 00	399 99	300 00	830 54
Sargent	135 30	44 04	220 74	200 03	600 11
Stearns	91 80	25 75	215 96	199 96	533 47
Tarbell	189 54	25 75	152 52	300 00	667 81
Willard	268 79	158 02	527 01	500 00	1,453 82
Wyman	161 45	55 55	286 67	316 67	820 34
Superintendent's office		55 43	33 07		88 50
All schools (Weighing Coal)	51 10	487 54			538 64
Totals.	$6,878 99	$2,685 37	$9,502 81	$11,865 33	$30,932 58

City Lands and Surrendered Estates.

The matter of the appraisal and sale of the unimproved city lands has each year, for several years past, been committed to a joint special committee consisting of the Mayor, President of the Common Council and the members of the Committee on Public Property.

The special committee above-mentioned was authorized to sell such lands as had not previously been reserved for city uses. Many sales have been made during the past year. All the lands in the Franklin Street district were disposed of, and the purchasers have in most cases erected dwellings thereon. The south canal lot east of the Boston and Albany Railroad was sold, and is now occupied by a large manufacturing establishment. The land extending from Auburn Street northerly, through to Franklin Street, was sold, and this also is now the site of an extensive manufactory. A considerable portion of the area on Cambridge

and Portland Streets has been bargained for, the transactions having been closed in November, 1886, although the cash settlement will necessarily be entered in the accounts of the following year. Only one lot remains unsold in the Cambridge Street district. No sales of Almshouse lands have been made during the past year.

Mill-Pond District.

This territory remains nearly the same as stated in the last year's report. The entire Mill-Pond creek extending from Putnam Avenue to Blackstone Street, has been sold. The work of filling the upper basin of the old Mill-Pond has been continued from time to time by the Street Department, and this committee is not aware of the existence of any nuisance arising from stagnant water or other causes, in the district at the present time.

A plan of the Mill-Pond territory, showing proposed street and building lots, was made by the City Engineer several years since, but owing to lack of arrangement with the owner of adjacent lands with reference to proposed streets, no further action has been taken in reference to this territory. It is hoped that during the next year some arrangement may be made with these owners, so that this land can be developed in accordance with the city plan.

The lower-basin of the Mill-Pond, extending from Blackstone Street to the river, is in charge of the Street Department, to be used ultimately for wharf purposes.

Tax-Title Lands.

These lands remain the same as in the previous year. Signboards have been put up in the various lots, advertising the same for sale.

Janitors.

There are twenty-four janitors of school-houses and three janitors of city buildings employed under the direction of the Committee on Public Property. The duties of the janitors of the larger school-houses, as well as those of the city buildings, require undivided attention. Of the janitors of school-houses, there are fifteen who have the charge of one building each; eight have charge of two each, and one has charge of three buildings.

The committee also employs the janitors of the Ward Rooms of Wards Three and Five, during the season of the evening schools, when the rooms are used. Although these employés are appointed by the Committee on Public Property, and by that Committee are held responsible for the right performance of their duties, they are directly under the authority of the principals of the schools, and are expected to obey their orders in all reasonable matters. Rules and regulations are in force, which particularly define the duties of the janitors, and the school-department has full authority to secure a strict compliance therewith.

Blank reports of the manner in which the janitors of school-houses perform their duties, have been prepared by the superintendent of schools for use by the respective principals of schools.

The committee has urged that these reports be submitted each month at its regular meetings, and that special attention be called to any remissness on the part of a janitor, and the committee has always been desirous to coöperate with the school-committee in all efforts to promote the health and comfort of the teachers and children who occupy our school-houses. Complaints being infrequent, it is believed that the rules are very generally complied with.

THE FOLLOWING IS A SCHEDULE OF PROPERTY

owned by the city at the close of the year 1886, all of which is under the charge of this committee, except such as is specially noted:—

Almshouse Building.

Foot of Tannery Street, Ward 5, with $14\frac{242}{1000}$ acres of land in Cambridge, $15\frac{376}{1000}$ acres of land in Somerville, and $\frac{1}{10}$ acre in Arlington. Total area, $29\frac{3}{4}$ acres. Also stone ledge located on Almshouse land. (In charge of Board of Overseers of the Poor.) N. B.—A part of this land, situated in Somerville, is for sale, and is mentioned elsewhere in this schedule, under *City Lands (Salable)*.

Cemeteries.

Cambridge Cemetery. Foot of Coolidge Avenue, containing $40\frac{8129}{10000}$ acres of land. Also, additional territory adjoining, on

southeasterly side, purchased in 1885, containing $18\frac{765}{1000}$ acres, upland, and $6\frac{29}{100}$ acres marsh. Total $25\frac{55}{1000}$ acres. This land was formerly known as the Winchester Estate, and has been annexed to the City of Cambridge by Legislative enactment. The total area of the Cemetery lands, inclusive of this additional territory, is $65\frac{8679}{10000}$ acres. (In charge of Board of Commissioners of Cambridge Cemetery. Included in their report).

Burial-Ground. Garden Street, junction of North Avenue, containing 85,858 square feet of land. (Recently placed in charge of the Cemetery Commissioners.)

City Buildings.

Ward One Building, Brattle Square, and land, 16,153 feet.

Central Square Building, junction Western Avenue and Green Street, and 13,028 feet of land.

City Hall, Main Street, corner Pleasant Street, and 12,881 feet of land.

City Stables, Norfolk, Hampshire and Tremont Streets, and 72,661 feet of land. (In charge of Committee on Roads and Bridges).

Police Station, Norfolk Street, on City Stable lot.

City Lands (salable).

Lot on Sidney and Pilgrim Streets, containing 15,120 square feet.

Lot on Sidney Street, east side, near Auburn Street, containing $18{,}207\frac{3}{10}$ feet.

Lot on Portland Street, east side, near Cambridge Street, containing $61{,}142\frac{1}{10}$ feet.

Land in rear of Broadway, West Somerville, part of Cambridge Almshouse land, being lots 51, 54, 56, 57, 60, 67, 68, 69, 70 to 76 inclusive, 83 to 92 inclusive, 99 to 108 inclusive, 117 to 124 inclusive, on the city plan of Almshouse Building Lots, containing in all about 215,000 feet; (also included in the area of Almshouse lands).

City Lands (reserved for use).

Lot on Pilgrim Street, north side, containing an area of 23,700 feet, with buildings thereon belonging to the Sewer Department, the land being in use by that department.

Lot on Auburn Street, south side, between Brookline and Sid-

ney Streets, with buildings thereon belonging to the Cambridge Water Works. This lot is used by the Water Works department and has an area of 33,300 square feet.

Lot on Cambridge Street, north side, between McCabe and Harding Streets, containing about 5,000 feet. (This has been deemed an eligible site for an engine-house.

City Flats.

Flats, opposite City Wharf, Main Street, south side, opposite junction with Harvard Street; in all, 162,379 feet.

Commons and Public Squares.

Cambridge Common. Garden Street, North Avenue, and Waterhouse Street. Area, 370,785 feet.

Public Square. Between Waterhouse Street and North Avenue. Area, 13,180$\frac{7}{10}$ feet.

Arsenal Square. Garden and Chauncey Streets and Concord Avenue. Area, 3,189 feet.

Public Square. Between Waterhouse Street and Garden Street. Contents, 363 feet.

Public Square. Between Holmes Place and Cambridge Street. Contents, 20,956 feet.

Public Square. North Avenue, corner of Kirkland Street, on south corner. Contents, 23,074 feet.

Public Square. North Avenue, corner of Kirkland Street, on north corner. Contents, 33,357 feet.

Public Enclosure. Junction of Arrow and Main Streets, containing 872 feet.

Broadway Park. Broadway, corner of Norfolk Street. Contents, 107,181 feet.

Fort Washington. Waverly Street. Contents, 42,123 feet.

Public Square. Junction of Pleasant and River Streets. Contents, 1,569 feet.

Hastings Square. Brookline, Chestnut and Henry Streets. Area, 29,999 feet.

Dana Square. Lake, Magazine, Lawrence and Niagara Streets. Area, 33,531 feet.

Winthrop Square. Boylston, Winthrop and Mount Auburn Streets. Area, 10,236 feet.

Tudor Park. Between Fresh Pond drive and Watertown Branch Railroad, containing 53,032$\frac{2}{10}$ feet.

Engine-Houses.

House No. 1, Eliot Square, corner Mount Auburn Street, included with Ward 1 Building.

House No. 2, Main Street, near Winsor, and land, 3,150 feet.

House No. 3, Gore and Fourth Streets, and land, 4,220 feet.

House No. 4, North Avenue, near corner Russell Street, and land, 6,315 feet.

House No. 5, Hampshire Street corner Inman, and land, 6,000 feet.

House, Hook-and-Ladder No. 2, Cambridge Street, corner of Portland. (This is a building of doubtful value, and is situated on land recently sold by the city. By a special agreement it may remain as at present located until it is deemed expedient to remove the building.)

Gravel Pits.

Gravel Pit, in rear of Concord Avenue, southerly side, near Adams Street, containing 397,417$\frac{7}{10}$ feet. (In charge of Committee on Roads and Bridges.)

Gravel Pit, on Gay Estate, rear of Adams Street, near Concord Avenue, containing 23,076$\frac{5}{10}$ feet. The gravel only is owned by the city. (In charge of Committee on Roads and Bridges.)

Mill-Pond Property.

Old Mill-site and Basins. River Street, near Brighton Bridge, and upper and lower basins on River Street, Putnam and Western Avenues, comprising an area of 305,690 feet, or about 7 acres.

School-Houses and School-House Lands.

Allston, Boardman Street, 15,193 feet of land.

Agassiz, Oxford Street, corner Sacramento Street, 19,689 feet of land.

Boardman, Winsor Street, corner School Street, 10,018 feet of land.

Bridge, Pioneer Street, Lower Port, 4,646 feet of land.

Corlett, Holworthy Street, and 10,000 feet of land.

Cushing, Cushing Street, nearly opposite Locust Street, 14,788 feet of land.

Dana, Centre Street, and 14,317 feet of land.

Dunster, Concord Avenue, near Sparks Street, and 10,000 feet of land.

Felton, Amory Street, corner Summer Street, and 15,090 feet of land.

Gore, Gore Street, between Third and Fourth Streets, and 9,900 feet of land.

Gannett, (old) Columbia Street, between Lincoln and Cambridge Streets, and 8,802$\frac{7}{10}$ feet of land.

Gannett, (new) Jefferson Street, and 14,934 feet of land.

Harvard, Broadway, corner Inman Street, and 20,494 feet of land.

High School. Fayette Street, Antrim Street, and Broadway, and 37,828 feet of land.

Holmes, Hilliard Street, and 11,182 feet of land.

Lassell, Charles Street, near Sixth, and 10,000 feet of land.

Latin, Lee Street, near Harvard, and 10,100 feet of land.

Lowell, Lowell Street, near Mount Auburn Street, and 12,033 feet of land.

Mason, Front Street, corner Jennings Court and 10,000 feet of land.

Otis, Otis Street, between Fifth and Sixth Streets, and 8,270 feet of land.

Putnam, Otis Street, corner Fourth Street, and 10,000 feet of land.

Quincy, Mason Street, corner James Street, and 8,469$\frac{3}{10}$ feet of land.

Reed, Reed Street, Ward 5, and 12,000 feet of land.

Riverside, Putnam Avenue, Ward 1, and 11,198 feet of land.

Sargent, Broadway, corner Winsor Street, and 9,995 feet of land.

Shepard, North Avenue, near Russell Street, and 14,755 feet of land.

Stearns, Harvard Street, near Prospect Street, and 10,050 feet of land.

Tarbell, Grigg, Howard and Magee Streets, and 19,500 feet of land.

Thorndike, Thorndike Street, corner Sixth Street, and 10,027 feet of land.

Washington, Brattle Street, corner Farwell Place, and 14,-951½ feet of land.

Webster, Upton Street,and 25,839 feet of land.

Wellington, Columbia, corner of Lincoln Street, and 18,870 feet of land.

Willard, Lake, Lawrence and Niagara Streets, and 20,079 feet of land.

Wyman, Spruce Street, corner Groveland Street, and 14,346 8/10 feet of land.

Surrendered Estates.

These estates were surrendered to the city under the provisions of the statutes relating to low-land filling.

This list gives by whom surrendered and location of property.

CAMBRIDGE STREET DISTRICT.

Nourse, Susan M. Porter and Jefferson Streets. Lot of land, 3,578 feet, Porter Street.

COWPERTHWAITE STREET DISTRICT.

Crane, Ann, Heirs of. Grant Street and De Wolfe Street. Lot of land containing 12,353 feet.

WASHINGTON STREET DISTRICT, SOUTH DOCK, AND SOUTH CANAL.

Bent Heirs. Dock and Sixth Streets. West lot containing 5,959 feet.

Hunt, Fannie E. Harvard Street, north side, easterly of the estate of Bridget Manning; lot containing 6,966 feet.

TAX-TITLE ESTATES (SALABLE).

The following described estates were conveyed to the city by persons who had purchased them at auction sales by the Collector of Taxes, and the city has taken legal possession of the same.

Lot on Broadway, west corner of Sixth Street, containing 17,517 feet.

Lot on Second Street, east of Conlan's Court, containing 26,400 feet.

Lot on Hunting Street, west side, adjoining land late of Melley, containing 2,709 feet.

Lot on Spruce Street, near railroad, adjoining land of McSweeney; area undetermined.

Land on Walden Street, southeast of land of Darling, southwest of land formerly of Saunders; area 16,635 square feet.

WHARVES AND LANDINGS.

Public Landing, foot of Bath Street; area unknown. *Gerry's Landing*, so called, south of Mount Auburn Street; area unknown. Each has a frontage of 30 feet on the river.

City Wharf, Main Street, opposite Harvard Street, 13,680 feet.

WATER WORKS PROPERTY.

Old Engine House Lot, foot of Lake View Avenue, about 33,568 feet of land.

New Engine House, opposite foot of Lexington Avenue, and 90,414 feet of land.

Fresh Pond, lands bordering on; area unknown.

Little Pond, lands bordering on; area unknown.

Reservoir, Reservoir Street, corner High Street, and 86,920 feet of land. All the Water works property is in charge of the Cambridge Water Board.

Recapitulation of Areas.

Kind of Property.	Square feet.	Acres.
Almshouse lands, about	1,294,516	29.718
Cambridge Cemetery (original)	1,778,511.24	40.829
Cambridge Cemetery (enlargement)	1,091,395.8	25.55
Burial Ground, near Harvard Square	85,858	
Occupied by City Buildings	114,723	
City Lands (salable)	123,325	
City Lands, occupied by Sewer Department	23,700	
City Lands, occupied by Water Works	33,300	
City Flats	162,379	3.73
Commons and Public Squares	743,447.9	17.069
Engine House lot on Portland St., (reserved)	8,819.25	
Engine House lot on Cambridge St.,(reserved)	5,000.	
Occupied by Engine Houses	19,685	
Gravel Pit on Concord Avenue	397,417.7	9.125
Mill Pond Lands, about	305,690	7.018
Occupied by School-houses	477,345.5	
	6,665,113.39	
Amount carried forward	6,665,113.39	

Amount brought forward		6,665,113.39	
Surrendered Estates, lands:—			
	Square feet.		
Cambridge Street District . . .	357.8		
Cowperthwaite Street District .	12,353		
Washington Street District . . .	12,925		
Total in all the districts		25,635.8	
Tax-Title Estates, four estates		62,991	
Occupied by Water Works at Fresh Pond		210,902	
City Wharf Land		13,680	
Total about		6,978,322.19	160.2

Schedule

Of salable city lands, surrendered estates, and tax-title lands, included elsewhere in this report, with their appraisal :—

Lot on Sidney and Pilgrim Streets, containing 15,120 feet .	1,512 00
Lot on Sidney Street, east side, near Auburn Street, 18,207 $\frac{3}{10}$ feet	1,820 73
Lot on Portland Street, 61,142 $\frac{1}{10}$ feet	12,228 42
Flats opposite City Wharf, Lower Port, 162,379 feet . . .	3,000 00
Mill-Pond Property	15,000 00
Total city lands as appraised	33,541 15
Total surrendered estates	7,998 40
Total tax-title lands, about	10,000 00
	$51,559 20

Salable Almshouse lands, about 215,000 feet, unappraised.

The following appraisal has been made of some of the city property, hereinbefore classified. The estimates are based upon valuations made within a few years past.

The figures set against the items of City Lands, and Surrendered Estates, represent about the taxable value of the property, and are not, as a whole, an over-estimate.

The Mill-Pond Property which is quoted above at $15,000.00, the same as when purchased, has had a considerable sum expended upon it in filling, and although lots fronting on Putnam Avenue, have since been sold, the remaining land is actually not less valuable. When the contemplated streets are laid out through this territory, the salable portion of this land will be in demand for building purposes, and will easily offset any losses that may have accrued on other lands sold by the city.

The valuation of the various City Buildings and School-Houses is based upon their cost, and is given for statistical purposes.

Appraisal of Real Estate.

Almshouse and Land	$45,000 00
Cambridge Cemetery	79,750 00
City Buildings, Land and Furniture	282,284 50
City Lands and Surrendered Estates, (salable)	25,571 55
City Lands, occupied by Sewer Department	4,740 00
City Lands, occupied by Water Works	6,660 00
City Flats, 162,000	3,000 00
Engine-House, Inman Square	12,000 00
Engine-House, lot reserved on Portland Street	1,763 85
Gravel Pit, near Fresh Pond	4,000 00
Mill-Pond Lands	15,000 00
School Houses and Lands	716,000 00
Tax-title Lands	10,000 00
Wharf, Main Street, Lower Port	7,000 00
Total	1,212,769.90

Respectfully submitted,

EDWARD R. COGSWELL,
JOSEPH COGAN,
WARREN IVERS,
COLIN CHISHOLM,
D. E. FRASIER,

Committee on Public Property.

REPORT

OF THE

SUPERINTENDENT OF PUBLIC BUILDINGS.

OFFICE OF THE SUPERINTENDENT OF PUBLIC BUILDINGS,
CITY HALL, CAMBRIDGE, Dec. 1, 1886.

To the Honorable City Council:—

GENTLEMEN:—In compliance with the City ordinance, I herewith submit my annual report of the construction, repairs and improvements which have been made on the public buildings owned by the city during the year ending Nov. 30, 1886, under the direction of the committee on public property. The principal expenditures have been as follows, namely: Alterations on the building used for the Latin School on Lee Street, Ward 2, have been completed at a cost of 9,678.16. The addition to the Webster Grammar School-house in Ward 4, has been completed at a cost of $9,113.93. A School-house, called the Gannett Primary, has been built on Jefferson Street, Ward 2, on a lot of land owned by the city—taken under the low-land filling act. The cost of the building completed, exclusive of land, was $12,963.92. Two rooms have been added to the Wyman Primary School-house on Spruce Street, Ward 5, and finished at a cost of $3,876.65.

Cost of School-House Repairs.

High School, Ward 2	$823 09
Latin " "	175 74
Allston Grammar Ward 2	175 44
Corlett " Ward 1	301 47
Harvard " " 2	304 14
Putnam " " 3	125 13
Shepard " " 5	271 17
Thorndike " " 3	296 12
Washington " " 1	385 28
Amount carried forward	$2,857 58

Amount brought forward			$2,857 58
Webster Grammar,	Ward	4	558 05
Agassiz Primary	"	1	219 83
Boardman "	"	4	275 05
Bridge "	"	2	79 52
Cushing "	"	1	115 59
Dana "	"	2	337 28
Dunster "	"	1	95 59
Felton "	"	2	102 48
Gannett "	"	2	496 43
Gore "	"	3	685 48
Holmes "	"	1	317 75
Lassell "	"	3	94 61
Lowell "	"	1	142 13
Mason "	"	4	153 34
Otis "	"	3	222 34
Quincy "	"	1	76 52
Reed "	"	5	117 10
Riverside "	"	1	399 99
Sargent "	"	2	220 74
Stearns "	"	2	215 96
Tarbell "	"	4	152 52
Wellington "	"	2	235 28
Willard "	"	4	527 01
Wyman "	"	5	286 67
Office of Superintendent of Schools			33 07
Showing an aggregate expenditure on account of School-house repairs of			$9,017 91

Almshouse.

A boiler-room, of brick, has been added to the Almshouse, the cost of the same being $1,124.50. Two horizontal tubular boilers have been put in, and are now in use. These boilers with the necessary attachments cost $1,676.57.

The Almshouse cottage has been completed at a cost of $1,750.00, showing an aggregate outlay at the Almshouse of $4,551.07.

Fire Department.

An appropriation of $1,000 has been made for a bell-tower at the Corlett school-house, Holworthy Street, Ward I, for the use of the fire alarm telegraph. This tower is now in process of erection.

The miscellaneous repairs on the several engine-houses have been as follows :—

On Engine-house No. 2	$76 93	
Engine-house No. 3	16 35	
Engine-house No. 4	416 82	
Engine-house No. 5	99 77	
Hook and Ladder house No. 1	309 34	
Hook and Ladder house No. 2	40 40	
Fire alarm in First Parish Church	3 98	
Showing an aggregate outlay for repairs on account of the fire-department of		$954 59

Police Department.

The amount expended on Police Stations for repairs has been as follows: —

Station 1	$150 17	
Station 2	19 00	
Station 3	239 98	
Station 5	43 50	
Station 6	1 35	
		$454 00

Public Buildings.

There has been added to the City Hall on the West side, a fire-proof vault for the preservation of the City's records, at a cost of	$1,390 00
The room occupied by the Clerk of Committees has been enlarged and improved; the whole cost when completed will amount to $90.00. The bill for carpenter's work only has been paid	55 00
Sundry other repairs have been made on the City Hall at an expense of	$1,493 16
Showing a total expenditure on the City Hall building of	$2,938 16
On the Brattle Square building in Ward 1 there has been expended for repairs	$1,071 25
The repairs on the Central Square building in Ward 4 have amounted to	$1,609 03

I append hereto an estimate of the probable cost for repairs which it will be necessary to make on the Public Buildings during the ensuing year as follows, namely: —

The English High School-house is in a condition requiring general repairs externally and internally, and it will require at least an expenditure of $4,500 to put the building in good condition.

The Harvard Grammar School-house will require an expenditure of $1,650 for necessary repairs to prevent a more general deterioration.

If it should be deemed necessary to complete the fencing around the Webster School-house, to pave the front yard, repair the paving in the rear yard and put the grounds in good repair, it will require an appropriation of at least $900.

The Felton Primary School-house is much out of repair, but as the Superintendent of Schools recommends that it be remodeled in the near future, I propose that only such repairs be made at present as will serve a temporary purpose, which can probably be done at a cost of $100.

The Washington School-house is greatly deficient in heating appliances, and in proper system for ventilation, and I recommend in the interest of the health and comfort of the teachers, and scholars, of whom there are about 600, that the five furnaces, which have failed to furnish a required temperature with a very great consumption of fuel, be removed, and replaced by a competent system of steam-heating apparatus. The appropriation made for this purpose the past year was not expended, and I now respectfully recommend that a renewed appropriation of $3,000 be made for this purpose.

Beside the amount hereafter suggested for repairs on the Allston Grammar School, an additional appropriation will be required to cover the cost of the new plumbing work, which is now being constructed, the contract price of which was $2,231.

There will be required, so far as is now apparent for ordinary repairs at the

City Hall building	$1,100 00	
Brattle Square building	1,050 00	
Central Square building	900 00	
		$3,050 00

So far as is now apparent, there will be required for ordinary repairs on the other School-houses not enumerated before, the sums which follow:—

Latin	$150 00
Allston	400 00
Corlett	225 00
Putnam	150 00
Shepard	150 60
Thorndike	600 00
Amount carried forward	$1,675 60

Amount brought forward	$1,675 60
Washington	525 00
Webster	200 00
Agassiz	150 00
Boardman	350 00
Bridge	60 00
Cushing	100 00
Dana	192 00
Dunster	425 00
Gannett, Jefferson Street	100 00
Old Gannett, now part of Wellington	375 00
Gore	550 00
Holmes	125 00
Lassell	550 00
Lowell	100 00
Mason	200 00
Otis	275 00
Quincy	75 00
Reed	100 00
Riverside	200 00
Sargent	175 00
Stearns	255 00
Tarbell	100 00
Wellington	150 00
Willard	350 00
Wyman	150 00
Office of Superintendent of Schools	40 00
Total	$7,547 00

Fire Department.

I am not aware of any extraordinary requirements for any of the buildings connected with the Fire Department, unless it be incurred by a change of location of Hook and Ladder Co. No. 2.

Aside from this an appropriation to meet the necessary expenses for repairs for the ensuing year, is estimated as follows: —

Engine House No. 2	$345 00
Engine House No. 3	150 00
Engine House No. 4	250 00
Engine House No. 5	500 00
	$1,245 00

Police Department.

Estimate for ordinary repairs: —

Station No. 2	$250 00
Station No. 3	25 00
Station No. 5	25 00
	$300 00

With the above named exceptions, I believe that the public buildings of the city are in a fair condition and will require for their ordinary care and preservation only a moderate outlay.

Respectfully submitted,

BENJ. H. STEELE,
Superintendent of Public Buildings.

REPORT

OF THE

INSPECTOR OF BUILDINGS.

To the Honorable City Council:—

GENTLEMEN:—As required by Section 5 of the City Building Ordinance, I have the honor to submit herewith my first report in relation to the business of this department for the portion of year during which I have held the position. The importance and necessity for the regulations in the Building Ordinance have been fully demonstrated in my observation of the operation of the act. Since my appointment to the office in February last, I have given 425 permits to builders for new buildings and additions, and have ordered alterations and improvenments in several defective buildings which have come to my attention, all of which have been done under my personal inspection, and I am pleased to be able to report that in most cases I have been met by a cordial acquiescence in the requirements of the act, and in no instance by opposition of so serious a nature as to require a complaint to the Court in order to secure compliance with its conditions.

Notices given under the act to property owners requiring them to conform to those parts relating to the dangerous construction of buildings, and to chimneys already constructed, have been met generally by a ready compliance and prompt action on their part. That regulations appearing stringent should on their first introduction meet with some signs of opposition, it was natural to expect. But from my observation I am led to the conclusion that whatever there may be of opposition to the practical enforcement of the Building Ordinance in all its parts, will, as the public becomes more familiar with its application, be overcome, and that most persons will realize the importance and wisdom of strictly conforming thereto.

In detail, the services of the Inspector of Buildings have been

required in addition to the inspection of new buildings, in the following cases, namely: —

Buildings in a dangerous condition	9
Chimneys	22
Deficiency in means of egress	3
Dangerous condition of machinery	1
Violation of ordinance	23
Services of the State inspector	3

Table showing the number of permits granted in each ward for buildings and the purposes for which they are intended.

WARDS.	1	2	3	4	5
Apartment Hotels		4		5	
Additions to houses	3	5	4	6	5
Bake houses			1		
Bell Tower	1				
Church building				2	
Carriage building	3			1	4
Cellar walls	2	4		8	1
Chimney alterations			1	2	1
Cut through party wall	1				
Dwelling-houses in blocks	10	27	10	17	5
Factories		6	5	6	
Furnaces re-set				3	1
Library and reading-room	1				
Private school-house	1				
R. R. Station		1			1
Round locomotive-house			1		
Single dwelling-houses	47	35	8	26	43
Store buildings	3	9		8	3
Safety-vault				1	
Stables	9	6	5	11	13
Scale-house		1			
School-house		1			
School-house addition					1
Storage-house	1	3	4		
Steam boiler				1	
Stagings		4	1	2	
Shop buildings	3	4	1	8	3
Tank buildings			1		

Of the above permits 374 were for wooden buildings, 19 for brick buildings and 32 for sundry purposes, making a total of 425.

Those built of brick are divided as follows :—

Apartment hotels	3	
Factories	5	
Single dwelling-houses	8	
Stables	2	
Locomotive house	1	
Total of brick		19

Permits granted for each month :—

March	44	
April	58	
May	51	
June	47	
July	53	
August	51	
September	37	
October	40	
November	44	
Up to date		425

Of the whole number of buildings, 308 are now completed, while 85 are still in process of construction. These buildings have generally been of the better class, and many of them of a high order. Owing to a full compliance with the building ordinance a marked improvement is noticeable, especially in the strength and stability of the buildings constructed of brick and stone foundations.

Respectfully submitted,

BENJAMIN H. STEELE,

Superintendent and Inspector of Buildings.

REPORT

OF THE

COMMITTEE ON SOLDIERS' AID.

THE Committee on Soldiers' Aid submits to the City Council its report for the year ending Nov. 30, 1886:—

The amount paid as regular State aid was	$9,382 00
The amount paid to indigent soldiers and sailors was . . .	3,405 00
The amount paid to the agent employed in the examination of settlements, etc., was	350 00
Total	$13,137 00

The amount received from the Commonwealth was	$10,281 75
The amount received from other towns and cities	87 00
	$10,368 75

There are now upon the State-aid list 176 persons, and upon the list of indigent soldiers and sailors 42.

All of which is respectfully submitted,

JOSEPH COGAN,
GEO. A. ALLISON,
P. ALLEN LINDSAY,
CHARLES W. HENDERSON,
EDW. W. HINCKS.

Committee on Soldiers' Aid.

REPORT

OF THE

CEMETERY COMMISSIONERS.

To the Honorable the City Council: —

The Board of Commissioners of the Cambridge Cemetery respectfully submits its thirty-third annual report, the same being for the year ending November 30, 1886: —

The amount appropriated at the beginning of the year was	$13,000 00	
Additional appropriation	1,800 00	
Total amount of appropriations		$14,800 00
Total amount of expenditures		14,780 16
Balance unexpended		$19 84
Unexpended balance of cemetery extension account		947 81

Expenses under this head were taken from this amount until it was exhausted. Subsequent expenditures were taken from the regular cemetery appropriation.

This balance was brought over from last year, and was part of the proceeds of bonds issued, by authority of the City Council, for the purchase and improvement of the Cambridge Cemetery Extension.

For a detailed account of expenses reference is made to the Auditor's report.

The receipts for the year have been as follows: —

For Care of lots, etc.	$3,795 64
Burial fees and removals	2,215 09
Burial lots and graves	7,438 35
Brick graves and foundations	836 93
Rent of house	199 92
Apples, from trees in Winchester estate	68 00
Old shed, labor, wood, cedar posts and hay	109 39
Interest on fund for perpetual care of lots	462 00
Total amount of receipts,	$15,125 32
The estimated revenue was	13,000 00
Excess of revenue over estimate	$2,125 32

The whole number of interments during the year has been	574
The whole number of interments in the cemetery is . . .	14,768
The whole number of lots prepared during the year . . .	78
Estimated value of the same	$10,622 50
Number of lots now ready for sale	102
Estimated value of the same	$19,071 75
Single graves prepared and sold	97
Single graves prepared and for sale	57
Estimated value of graves for sale	$1,140 00
Amount received for perpetual care of lots in 1886 . . .	1,275 00
Amount of fund for perpetual care of lots	8,975 00

The usual work at the Cemetery has been carefully attended to; the paths and avenues have been kept in good condition, and the usual work done, on lots cared for by the Cemetery authorities.

Thirty feet have been added to the retaining wall, on the bank of the marsh, one hundred and eight feet of ten-inch drain pipe laid, and one hundred and eighty-four square feet of gutters have been paved.

The water pipes have been extended to the eastern part of the cemetery, seven hundred and twenty-five feet of pipe having been laid; the labor of digging and filling the trench for the same was performed by the laborers at the Cemetery. The entire grounds (exclusive of the extension) are now well supplied with water.

Besides the regular work of repairing and regrading avenues and paths, the grading of Fir Avenue has been completed and Rosebay Avenue one-half graded.

The Knoll, in the new part of the cemetery, which is covered with a growth of beautiful shade trees, has been further improved by removing the Summer House, formerly belonging to the Winchester estate, and placing it on the top of this knoll among the trees. This will soon be one of the finest portions of the Cemetery.

It is intended during the coming year to fit up rooms on the first floor of the Winchester Mansion, so that they may be used as a chapel. These rooms are now so connected that they can, with little expense, be made suitable for such purpose, and will furnish a seating capacity of over two hundred.

The rapid increase of our city in population and the growth of the cemetery make the necessity for a new and larger receiv-

ing tomb more apparent every year. This cannot be deferred much longer; it should be done without delay.

In December, 1885, the City Council placed the old burying ground, on Garden Street, near Harvard Square, in charge of this Board.

The work of improving these grounds is being pushed forward as rapidly as possible, and will be completed early in December, unless stopped by frost, in which case it will be resumed as soon as practicable.

The whole ground will be sowed to grass, in the spring, and such other improvements made as shall take from this ancient burial place the appearance of neglect, which has characterized it for so many years.

The expense of improving and caring for the Cemetery extension, which is over eighteen acres in extent, which was largely met from the Cemetery Appropriation, together with the expenses incurred on the old burying ground, made it necessary for the Commissioners to ask for an additional appropriation of eighteen hundred dollars; this, being granted, enabled the Board to carry on all necessary work. The revenue, however, has so far exceeded the estimates that it has more than paid the expenses of this department.

WM. E. RUSSELL,
SILAS B. BUCK,
JOHN F. O'BRIEN,
DAVID ELLIS,
GEORGE S. SAUNDERS,
CHARLES E. RAYMOND,
LEANDER GREELY,

Commissioners of the Cambridge Cemetery.

REPORT

OF THE

CITY ENGINEER.

OFFICE OF THE CITY ENGINEER, CITY HALL,
CAMBRIDGE, Dec. 29, 1886.

To the Honorable the City Council: —

GENTLEMEN: — The City Engineer herewith presents a report of the operations and expenses of the departments of Engineering and Sewers, for the year ending Nov. 30, 1886.

Streets.

The bulkhead recommended for the last two years for the southerly side of Mount Auburn street has not yet been built. I still renew the recommendation and urge the importance of the work.

The granite block paving on Main Street has been extended to Portland Street, also a portion of Harvard Square and Street, as far as its junction with Main Street. Estimates and quantities have been prepared, covering the whole of the intervening distance, and it is hoped that this important work will be pushed as fast as the city finances will admit.

Streets have been laid out and accepted as shown in the following table.

Street.					Plan.		
Name.	From	To	Length in feet.	Width in feet.	Date.	Made by	Accepted.
Agassiz Street.....	Linnæan Street	Lancaster Avenue.....	373.45	40	Aug., 1886.....	William A. Mason & Son.	Oct. 29, 1886.
Cleveland Street.....	Ellery Street.....	Dana Street.....	300.27	30	Aug. 24, 1885...	William A. Mason & Son.	Oct. 29, 1886.
Coolidge Avenue.....	Mt. Auburn Street.....	Former City line.....	466.00	..	June, 1886.....	City Engineer.....	July 23, 1886.
Day Street.....	North Avenue	Somerville line.....	347.39	40	Oct. 15, 1884...	William A. Mason & Son.	July 23, 1886.
Kinnaird Street.....	River Street.....	Western Avenue.....	327.25	40	Dec. 1, 1886....	William A Mason & Son.	Dec. 31, 1886.
Lancaster Avenue....	Washington Avenue.....	Easterly	433.00	40	Aug., 1886.....	William A. Mason & Son.	Oct. 29, 1886.
Oliver Street.....	Wyeth Street.....	Winslow Street.....	215.58	30	Nov. 25, 1885...	William A. Mason & Son.	Sept. 10, 1886.
Orrin Street	Garden Street.....	Southerly.....	295.45	30	Nov. 25, 1885...	William A. Mason & Son.	Sept. 10, 1886.
Summer Street..... .	Prospect Strect.....	Amory Street.....	253.11	30	July 29, 1885 ...	Elliot, Brooks & Co.....	June 24, 1886.
Washington Avenue..	Linnæan Street	Hillside Avenue	534.75	50	Aug., 1886.....	William A. Mason & Son.	Oct. 29, 1886.
Winslow Street.....	Garden Street.....	Orrin Street	349.24	30	Nov. 25, 1885...	William A. Mason & Son.	Sept. 10, 1886.

Mill Pond.

Very little has been done on the Mill Pond land this season.

No complaints as to bad odors have been made, but there have been some regarding surface drainage, which will be obviated by catch basins located at suitable points. The sale of lots has been suspended for the present, and the matter of laying out the grounds for a public park is being considered.

Bridges.

No extensive repairs or rebuiding have been required during the year. All the bridges maintained wholly or in part by the city are in good condition, and will need during the coming year only the ordinary repairs, except the southerly abutment of the Third Street Bridge, which should be relaid early the coming season.

New Bridge to Boston.

Favorable action was again taken by our city relating to this structure, passed the Board of Aldermen in Boston, and in the Common Council was laid on the table, and so far as is known no further action has been taken. It is unfortunate that complete action could not now be taken and the work proceed while favorable contracts can be made. A very small advance in the price of iron would materially increase the cost of the work.

Sewers.

There have been constructed the present year $2\frac{404}{1000}$ miles, of sewers, the details of construction of which are shown in the following table, making a total length of sewers in the city $73\frac{834}{1000}$.

Sewers Constructed Between Dec. 1, 1885, and Dec. 1, 1886.

Location.			Construction.						Total Cost.
Street.	From	To	Built by	Material.	Size in inches.	Manholes.	Inlets	Length in feet.	
Albany	Main street	Southerly	City Engin'r.	Portland pipe	10	..	9	155.7	$125.94
Bellevue Avenue	Raymond street	Easterly	" "	" "	10	1	24	394.2	490.24
Bellevue Avenue	End of old sewer	Easterly	" "	Akron pipe	10	.	10	141.1	137.96
Boylston	End of old sewer	Northerly	" "	Edmands pipe	12	..	2	10.3	11.92
Blake	North avenue	Easterly	" "	Portland pipe	10	1	28	390.4	263.20
Bristol	Berkshire street	Easterly	" "	Akron pipe	10	..	4	41.3	29.68
Broadway, Pelham & Pioneer Av.	Sixth street	Northerly end of Pioneer avenue	" "	Portland pipe	15, 12 and 10	4	71	896.0	1,091.34
* Brookline (see Henry)	Henry street	Northerly	" "	" "	10	..	..	....	.....
Brookline	End of old sewer	Northerly to near Putnam avenue	" "	Akron pipe	10	..	6	68.2	49.63
Cambridge	Sumner street	Westerly	" "	Portland pipe	8	..	3	35.7	33.58
*Coggswell Avenue	End of old sewer	North avenue	" "	Akron pipe	10	..	4	149.5	259.43
Coggswell Avenue	North avenue	Engine House No. 4	" "	" "	6	..	..	125.0	.....
Crescent	End of old sewer	Westerly	" "	Portland pipe	10	1	14	152.0	131.97
Fifth	Otis street	Southerly	" "	" "	10	1	6	97.3	149.24
Fifth	Bent street	Charles street	" "	Brick	18x24	1	20	235.4	965.59
Fourth	Spring street	Northerly	" "	Akron pipe	10	1	8	108.7	160.00
Glenwood	Pearl street	Northwesterly	" "	" "	10	..	11	166.6	170.14
Henry and Brookline	End of old sewer	Easterly and Northerly	" "	Portland pipe	10	1	12	228.6	354.36
Henry	Sidney street	Westerly	" "	" "	10	1	10	159.4	189.48
Hollis	Spruce	Northerly	" "	" "	12	1	18	296.6	307.82
Holyoke	End of old sewer	Northerly	" "	Akron pipe	8	..	4	54.0	133.00
Hurlbut	End of old sewer	Northerly	" "	Portland pipe	8	..	4	44.4	34.66
Kinnaird	Angle sewer	Westerly	" "	" "	10	..	10	117.6	89.01
Lexington Avenue	Brattle street	Northerly	" "	" "	12	1	20	265.4	310.78
Locke	End of old sewer	Northerly	" "	Akron pipe.	10	1	10	157.8	146.64
Lowell	Brattle street	Charles River	" "	Brick	28x36 and 52	3	82	1,256.2	6,923.85
Main	End of old sewer	Easterly to near B. & B. & A. Branch R. R.	" "	Portland pipe	10	..	6	96.2	82.33
† Mt. Auburn and Marsh Court	Willard street	Westerly, Northerly and Westerly	" "	" "	12 and 10	2	35	553.3	1,482.16
† Parker	Buckingham st.	Northeasterly to near Concord avenue	" "	Akron pipe	10	2	47	641.8	1,061.62
Pearl	William street	Northerly	" "	Portland pipe.	10	..	4	45.3	41.51

Sewers Constructed Between Dec. 1, 1885, and Dec. 1, 1886, (Continued.)

Location.			Construction.						Total Cost.
Street.	From	To	Built by	Material.	Size in inches.	Man-holes.	In-lets	Length in feet.	
Pelham (see Broadway, Pelham and Pioneer Avenue)	Broadway	Pioneer avenue	City Engin'r.	....	..	.	..	....	....
Pemberton	End of old sewer	Northerly to near Spruce	" "	Akron pipe	10	..	7	72.5	54.69
Pioneer Ave. (see Broadway, Pelham and Pioneer Ave.)	Pelham street	Easterly to end of ave.	" "	....	..	..	..	....	....
Prospect	Cambridge street	Southerly	" "	Brick	16x22	1	16	194.0	500.66
Prospect	Hampshire street	Summer street	" "	Portland pipe	10	1	48	660.1	359.16
Putnam Avenue	Sidney street.	Westerly	" "	Akron pipe	10 and 8	1	25	367.2	336.29
Raymond	Linnæan street	Bellevue avenue	" "	Portland pipe	12	4	83	1,172.0	1,487.17
Rogers	Fifth street	Easterly	" "	Cement pipe	12	..	13	192.5	156.91
Second	Gore street	Southerly	" "	Portland pipe	10	..	6	111.9	94.72
Second	Cambridge street	Southerly	" "	Akron pipe	10	..	5	99.3	85.02
Spring	Fifth street	Easterly	" "	" "	10	..	8	81.3	68.86
†Spring	First street	Westerly	" "	" "	12	1	24	377.6	700.07
Temple	Main street	Northerly	" "	Portland pipe	10	1	10	216.9	188.21
Union	End of old sewer	Northerly	" "	Akron pipe	10	1	14	146.1	128.37
Washington	End of old sewer	Near Norfolk street	" "	" "	10	..	4	45.3	44.16
William	Magazine street	Westerly	" "	Portland pipe	10	1	8	122.8	148.12
Agassiz	Linnæan street	Lancaster avenue	Priv. parties	" "	10	2	16	418.2	....
Bates	Avon Hill street	Westerly	" "	Akron pipe	12	2	23	354.5	....
Lancaster Avenue	Washington ave.	Near Lancaster street	" "	Portland pipe	8	..	19	438.4	....
Washington Avenue	Linnæan street	Near Hillside avenue	" "	" "	10 and 8	2	28	538.4	....
						39	839	12,693.0	$19.579.49

* Both sections included in cost. † On pile foundations.

Charles and Sixth Street Sewers,

Which have been so troublesome for a number of years past, have been rebuilt in a thorough and substantial manner, and have afforded relief to the parties making use thereof. A new outlet runs through Fifth Street to the Binney Street sewer into which it now discharges. The total cost of this new sewer and the reconstruction was $7,337.14.

Lowell Street Sewer.

The Lowell Street sewer between Charles River and Brattle Street, has been rebuilt of a size to receive a much larger proportion of storm water than formerly, and is believed to be ample to prevent the frequent flooding of cellars on that street, as has previously been the case. The outlet from Mount Auburn Street to the River has been built of a size ample to receive the sewage from the outlet of the sewer now in process of construction to the Belmont district. A new and direct line was adopted for its direction to the river, across land of the Cambridge Hospital.

An exchange of right of way, from the old and crooked one existing, to a straight line, being accomplished by negotiation with the trustees of the hospital, the necessary papers having been passed. This work has been built at a cost of $6,923.85.

Belmont District Sewer.

Much complaint was made early this season tending to force relief from low ground in the Belmont district. Attempts were made to establish the certainty or uncertainty of an old water course through Mount Auburn, the old culvert or passage for water from this district having been obstructed so as to prevent proper drainage. Permission was obtained from the President of of that Corporation to clean a portion of the culvert in their grounds, but after cleaning a portion, they absolutely forbid further operations. A thorough search was then instituted and many parties were seen, to try and establish the existence of an old natural water course, but without avail; it was finally deemed best to build a trunk sewer from the Lowell Street sewer, the outlet of which was porportioned of suitable size to take this additional drainage, and an order was passed, authorizing the construction of the sewer as far as McDonald's land, he and Gilmore being the principal sufferers. A debt of $25,000.00 was authorized for

payment of the same. Work was commenced October 20, 1886, and has progressed quite satisfactorily since. The work is being built in two sections, the easterly section being done by a Carson excavator, and the westerly one by a Clarkson machine belonging to the sewer department of this city. Owing to the great depth it is expected to continue this work through the winter months.

Bridge Street Outlet.

Owing to opposition from the committee of the city of Somerville, this work was delayed to a considerable extent and finally performed without the consent or concurrence of the Somerville authorities, they having the feeling that the work done was not warranted and did not pay for the large expenditure incurred.

It is still my opinion, that in some way this nuisance might be greatly mitigated at the works where created, and this whole matter kept from the main sewer. The allusion to a filter at Winchester Highlands in my last report has been further investigated, and decided not to be adapted to this particular style of drainage, but if suitable encouragement were offered, no doubt a suitable plan would soon be devised. The cost of cleaning was $2,524.30, the material as usual being removed out into Boston Harbor. After considerable delay, Somerville paid the usual proportion of the cost, being $\frac{5}{9}$ of the whole.

Alewife Brook.

But few complaints have been made the present year, and nothing has been done except to clean it as usual, or in consideration of the few complaints made. Notice has been served on the City of Cambridge, of a suit brought by the Henderson Bros., (large owners of property bordering on the brook) laying their damages at $25,000.00.

Rebuilding and Repairs.

Sewers have been built as recommended in my last report, in Charles Street, in portions of Sixth, Second, Franklin and Spring Streets; also in portions of Prospect, Hampshire and Amory, not recommended, but rendered necessary from their demoralized condition, or shallowness of grade, the most notable of which were those of Prospect, Hampshire and Amory Streets, the total length of which was 2,145 feet, and the cost $3,010.68.

New Sewers Required.

In addition to the usual demands for small sewers, there will be required and offered for your consideration, a sewer in Vassal Lane from Lake View Avenue to Walden Street, in Walden to Concord Avenue, in Concord Avenue to Appleton, and in Saville Street between Walden and Appleton. The estimated cost of these sewers will be about $8,500,00.

There should be a new and enlarged outlet for the Shepard Street and North Avenue district, which has long suffered for this need. Many of the cellars in this district are flooded even in ordinary storms. There are two or three ways by which relief can be afforded. One is by rebuilding a portion of the sewer in Ash Street as far as Mount Auburn, extending in Mount Auburn to Hawthorne, in Hawthorne to Brattle Street through the Oliver Hastings estate to Philips Place, and thence to Garden Street, 2,450 feet extention, cost, $22,000.00. Another plan would be to rebuild the sewer in Brattle and Ash Streets to a point near the Washington Elm or Waterhouse Street, length and cost very nearly the same. Another plan would be to enlarge the Murray Street sewer and extend through Brattle and Harvard Square and North Avenue to Waterhouse Street, length 3,600 feet, with a branch through Garden to Waterhouse Street, length of branch 1,300 feet, with a total cost considerably greater. The sewer in Sparks Street for a portion of the distance between Mount Auburn and Brattle Streets should be rebuilt of enlarged size and provided with new and improved tide gates. Estimated cost about $6,000.00.

The appropriation for Sewers Construction was	$22,000 00
The amount expended	21,334 14
The balance unexpended	$665 86
The appropriation for Sewers maintenance was	$21,000 00
Additional approriation	2,000 00
	$23,000 00
Expended	22,972 00
Balance unexpended	$28 00

Water Works.

Work has been continued on the Stony Brook additional supply under a contract with Henry H. Pike and Son, some portions

of which have made good progress. The earth work of the dam being very nearly completed in a satisfactory manner, all the muck has been removed from the bottom of the pond, or covered with gravel. The grubbing and clearing is all finished, but there has been great delay in the cutstone work, scarcely any progress having been made during the last four or five months. The only reason which can be given for this delay is supposed to be a difficulty existing between the contractors at the quarries and at the dam, which was supposed to have been adjusted some time since, by the contractors at the dam taking a lease of the quarry and getting out the stone themselves. As yet very little progress on this part of the work has apparently been made, although at this date the stone is coming along more rapidly. Every effort possible has been made by the Engineers and others connected with the work, to push this portion, but without avail thus far. It is hoped more progress will be made in the near future. The severe flood of February of this year, reaching a maximum flow of about 800,000,000 gallons in twenty-four hours did no damage to the work, as ample provision had been made for a contingency so great, and demonstrated the fact that the waste-way and overflow, provided for the finished work, will take even a greater flood than that of February last, which was one of unusual severity.

The work of filling the pipe with water from the brook, pumped in with a steam engine, has been accomplished and the first and second sections have been successfully tested to the required pressures. It is hoped the other sections will stand the pressure as well.

No settlements of land or water damages have as yet been made. Commissioners have however been appointed, and two hearings have been held, before whom some of the parties at interest have been heard, but no decisions have yet been rendered. A series of long and tedious hearings have been had before Judge Lowell as auditor in the Kiernan and Grace suit, who now has the matter before him, but no decision has yet been rendered. Other claims will be brought forward, and much time will be consumed the coming year in these matters. A large amount of work has been done under the immediate supervision of the superintendent at Fresh Pond; a roadway with a water slope covered with paving has been completed, almost entirely around

the pond; there are still two or three ice privileges which thus far make the roadway incomplete.

The dam at Black's nook is now nearly finished, an amicable settlement on terms quite favorable to the city having been made.

Much more land has been acquired, either by purchase or taking and generally on favorable terms. Much time and labor have been required of this office, in preparing the necessary plans for the purchases and takings. When this roadway is completed, and land all around the pond acquired, Cambridge will have a drive and water park of which she justly may be proud, and acquired at a comparatively small cost. She may well thank the President of the Water Board for his persistent efforts and untiring zeal to this end.

Cemetery.

The Winchester land lately purchased is being rapidly taken up. It is quite desirable that a general and comprehensive plan of the laying out of the grounds should be adjusted, so as to avoid a general confusion in numbering and sale of lots in the future. A considerable amount of time has been devoted to staking out lots, locating graves and other work incidental to the cemetery.

Building Ordinance.

During the present year the new building ordinance was adopted, and Mr. Benj. H. Steele was elected superintendent of Public Buildings, and also inspector. He has taken hold of the work with energy and zeal, and has shown that he is thoroughly honest and competent for the position. The ordinance has been thoroughly gone over and revised, and with the late revision makes a very complete and thorough ordinance, which if properly enforced, will be of great value to the city.

Office.

The Stony Brook Supply, still in process of construction, and work at Frest Pond, has continued to increase the duties of the City Engineer and draw largely on his time. This being recognized by the Water Board, one half of his salary was this year paid by the water department on suggestion of the engineering committee. The usual demands for work by the various de-

partments, have been met as desired. Acknowledgements are here made to all the assistants connected with this department for their cheerful and willing performance of all the duties entrusted to them.

Appropriation for Engineering, ...	$7,500 00
Less amount paid by Water Works	1,500 00
Expended for salaries and expenses	$5,550 74
Balance	$449 26

Respectfully submitted,

WM. S. BARBOUR,

City Engineer.

REPORT

OF THE

SUPERINTENDENT OF STREETS.

To the Honorable City Council:—

THE undersigned asks leave to submit for your consideration his third annual report.

The appropriation for the Street Department (repairs) for the financial year ending Nov. 30 1886, was	$85,000 00
Amount expended	84,266 42
Balance unexpended	$733 58

And I will say here that there would be no balance unexpended if the November weather had been favorable for street cleaning purposes. This amount has been expended for the necessary labor, material and the utensils employed in grading and repairing streets, collecting ashes, and for building a shed for water-carts, and a brick house for scales. (For the different items see Auditor's report.) The streets are in fair condition, but not what they should be, and before they are, a large amount of money must be expended on them, and I think now is the time to begin. I would recommend an increased appropriation the coming year. We have used the balance of the gravel for street-making purposes the present year. Means should be taken to provide a liberal supply, and here I might add that more land is needed to give necessary room at the city yards, and now is the time to procure it before the surrounding lands are built upon. Again I say that it would be economy for the city to own a steam road-roller. A bulkhead should be built on the water side of Mount Auburn street, west of the old gas-house where the street borders on the marsh. It is a continual source of danger and expense. The following streets have been repaired the present year:

Austin Street, patched with gravel.

Banks Street, patched with gravel.

Beaver Street, graded with gravel.

Blackstone Street, partially graded with gravel.

Brattle Street, patched with cracked stone.

Brewery Street, graded with gravel.

Broadway, picked and graded with cracked stone, from Third Street to Sixth Street, and from Portland Street to Antrim Street.

Brookline Street, partly picked and entirely graded with cracked stone.

Carson Street, patched with cracked stone.

Cherry Street, graded with gravel from Harvard Street to Washington Street.

Cogswell Avenue, graded with gravel its entire length.

Concord Avenue, graded with gravel from Craigie Street to Walden Street.

Crescent Avenue, graded with gravel nearly its entire length.

Douglass Street, graded with gravel its entire length.

Dover Street, graded with gravel its entire length at the expense of the Cambridge Horse Railroad.

Florence Street, graded with gravel its entire length.

Gardner Street, graded with gravel its entire length.

Garfield Street, graded with gravel about two-thirds of its length.

Gore Street, thoroughly patched with cracked stone from Fifth Street to the Somerville line.

Hampshire street, patched thoroughly with cracked stone from Cambridge Street to Columbia Street.

Hastings Street, graded with gravel its entire length.

Harvard Street, picked and graded with cracked stone from Main Street to Winsor Street, and partially patched from Main Street to Lee Street.

Harrison Street, graded with gravel its entire length.

Henry Street, graded with gravel from Brookline Street to Pearl Street.

Highland Avenue, graded with gravel its entire length.

Holly Street, graded with gravel its entire length.

Howard Street, graded with gravel from Western Avenue to Kinnaird Street.

Inman Street, picked and graded with gravel its entire length

Jay Street, graded with gravel from Western Avenue to Kinnaird Street.

Kinnaird Street, graded with gravel between Pleasant Street and River Street.

Lake View Avenue, graded with gravel from Brattle Street to Worthington Street.

Magazine Street, picked and graded with gravel its entire length.

Main Street, picked and graded with cracked stone north side from Norfolk Street to Prospect Street, and both sides from Pleasant Street to Trowbridge Street, including the square to west line of Putnam Avenue.

Mead Street, graded with gravel its entire length.

Mount Auburn Street, picked and graded with gravel from Lowell Street to Brattle Square, and patched from the Square to Putnam Avenue.

Moore Street, graded with gravel from Broadway nearly to Main Street.

Ninth Street, graded with gravel from Cambridge Street to Spring Street.

North Avenue, graded with gravel and patched from Alewife Brook to Igo's.

Pearl Street, picked and graded with cracked stone from Main Street to Putnam Avenue.

Pine Street, partially graded with gravel.

Pleasant Street, graded with gravel from Florence Street to Western Avenue.

Portland Street, graded with gravel from Main Street to Broadway, and thoroughly patched from Hampshire Street to Cambridge Street.

Putnam Avenue, graded with cracked stone from Green Street to Hayes' Court, and patched with gravel from there to Western Avenue and from River Street to Pleasant Street

School Street, graded with gravel from Winsor Street to Austin Street.

Sixth Street, graded with gravel from Otis Street to Thorndike Street, and patched from Thorndike Street to the Railroad track.

Summer Street, graded with gravel its entire length.

Tufts Street, graded with gravel its entire length.

Walden Street, graded with gravel from North Avenue to Mead Street.

Washington Street, graded with gravel from Harrison Street to Norfolk Street

Warland Street, thoroughly patched with gravel its entire length.

Warren Street, thoroughly patched with cracked stone.

Willard Street, graded with gravel from Mount Auburn Street to Foster Street.

And I might add other streets patched more or less, too numerous to mention. I will now name a few of the many streets that should be thoroughly graded the coming year: North Avenue, from Jarvis Street to Porter's bridge, and from Spruce Street to the Arlington line; Brattle Street its whole length: Concord Avenue its whole length; Boylston Street its whole length; Mount Auburn Street, from Boylston Street to Putnam Avenue; Garden Street its whole length; Kirkland Street, from Cambridge Street to the Somerville line; Hampshire Street its whole length; First Street its whole length; Third Street, from Cambridge Street to the bridge; Sixth Street, from Thorndike Street to Broadway. I might keep on naming them, but this is enough. (For streets accepted during the year see Engineer's report.)

The appropriation for paving was	$29,870 92
Amount expended	28,520 94
Balance unexpended	$1,349 98

This amount has been expended in the paving of Main Street, from Pelham Street to the west line of Portland Street. Harvard Street, north side from the west line of Dunster Street to Bow Street: Putnam Avenue, from Mount Auburn Street to the south line of Green Street, and the setting of curbstones and paving of quite a number of sidewalks that were asked for by the citizens. A large number of new cross-walks have been laid, and numerous repairs made in curbstone sidewalks and gutters that were already laid. And here I might say that there are miles of curbstone, brick sidewalks and gutters sadly in need of repairs which should be provided for, and I also think that when the people are anxious to do their part in paving sidewalks,

the city should provide means to do its share. I will go further and say that all much travelled sidewalks should be paved. The City Government of the present year has initiated means, in which I heartily concur, for the paving of Main Street from Portland Street to the crossing in front of the retail store of F. A. Kennedy, and I would recommend that the south side of Harvard Street be paved the coming season opposite the paving laid the present year.

Street Department (Watering).

The appropriation for this Department was	$21,602 48
Amount expended	21,577 48
Balance unexpended	$25 00

This amount was expended for labor watering the streets, new tubs, repairs to the carts, and payment for the water used. The carts are all in good condition, and will require very little overhauling the present winter.

Bridges.

The appropriation for this Department was	$2,500 00
Amount expended	2,468 75
Balance unexpended	$31 25

The bridges are in fair condition, and will require but little more the coming year than the ordinary running expenses. (For further details, see City Engineer's report.)

Shade Trees and Public Grounds.

The appropriation for this department was	$4,500 00
Amount expended	4,468 75
Balance unexpended	31 25

This department is in fair condition, but I again state that I think the appropriation should be larger, so as to allow a more liberal care of the trees than they can have with the usual amount appropriated, and to provide for the removal of the dead or decayed ones, which are numerous. And here I might say that some provision should be made for putting proper guards around all of the trees in the public streets. Of course the job is a large one and should be done a piece at a time until all are reached. I hope provision will be made for the completion of the

grading of Dana Square, which was commenced this fall but had to be suspended on account of the weather.

Schedule of Property belonging to Street Department.

Thirty-two horses	$6,400 00
Thirty-three watering-carts	9,900 00
Engine and stone-crusher	3,500 00
Five street-rollers	1,500 00
Twenty-four carts	2,400 00
Twenty-four sets of harness, etc.	622 00
Eight wagons	495 00
Twenty-eight sleds and snow-ploughs	1,870 00
Railroad track, at East Cambridge	400 00
Tools and stable furniture	913 00
Thirty feet of North River flagging	25 80
Nine thousand bricks	108 00
Twenty tons of gutter paving-stone	32 00
One hundred tons of granite block-stone	160 00
Twenty-four thousand block paving-stone	960 00
Six lawn-mowers	90 00
One lawn-roller	15 00
One lawn hand-cart	80 00
Three pungs	100 00
Garden hose	10 00
Total	$29,580 80

I conclude with returning my heartfelt thanks to the members of the Standing and Joint Committees for their generous assistance and direction. I have only one regret in the matter and that is that but one of them will be in the incoming government; to his honor the Mayor for his ever ready sensible advice and encouragement, and the other members of the City Council for their indulgence and approval, and to the heads of the different departments for their ready assistance, suggestions and advice when needed.

Respectfully submitted,

JOHN McSORLEY,

Superintendent of Streets.

REPORT

OF THE

COMMISSIONER ON WEST BOSTON, CANAL, AND PRISON POINT BRIDGES.

The Commissioner for West Boston, Canal and Prison Point Bridges submits for himself and associate the sixteenth annual report of matters pertaining to West Boston and Canal Bridges, and the tenth annual report on Prison Point Bridge.

West Boston Bridge.

The principal work done upon this bridge during the past year has been the rebuilding of the northerly sidewalk and fence from the draw to the solid filling at the Cambridge end. The contract for this work was awarded to Messrs. Ross and Shaw who were the lowest bidders. The work was commenced early in September and was completed in October. The portion rebuilt is little more than a quarter of a mile in length.

In rebuilding, a plan was adopted which relieved the bridge of a large amount of dead weight, and it is believed that the new sidewalk will prove more durable and require less expense for repairs than the old form.

The old brick sidewalk was laid on gravel about two feet six inches in depth. The timber bulkhead which retained this gravel at the outside of the sidewalk, and the plank floor underneath were badly decayed and were both removed. All decayed plank on the floor of the bridge near the edgestone, and such stringers as were seriously weakened by decay were also removed.

Provision had been made in the contract for removing a large number of the stringers if necessary; on stripping the bridge, however, most of them were found to be slightly decayed on the upper edge, and all of them excepting a few that were condemned

and replaced with new, were turned bottom edge up and retained in the bridge. By this course a saving of several hundred dollars over the estimated cost was made.

The floor plank removed was replaced and a new floor built for the sidewalk at the proper height to give about four inches of gravel under the brick, and the surplus gravel was removed from the bridge. Kyanized spruce floor plank was used both under the roadway and sidewalk. The kyanizing was done by the Proprietors of Locks and Lands in Lowell, by whom it has been long in use and who have found it very effective in preventing the decay of timber. The old bricks were re-laid so far as found suitable. In the roadway scuppers of a different and more capacious pattern were built and the paving was re-laid. A new hard pine fence was built for the whole length, and oiled and painted.

The sidewalk upon the opposite side of the bridge is in bad condition, and it is intended to repair it in a similar manner next year.

Under the same contract, twenty-five sets of double hard pine girder caps were put on the same number of bents of piles underneath the bridge. This was done to reënforce the old girder caps which are of soft white pine and were crushing under the heavy load upon them. The remainder of the bents of piles on this part of the bridge, about fifty in number, should be repaired in the same manner next year.

The total cost of the work done under the contract with Messrs. Ross and Shaw, was $7,028.68.

The draw and machinery for moving it are in good order.

The Cambridge Horse Railroad Company has re-laid its tracks across the bridge during the year. The officers of the corporation promptly responded to the calls of the commissioners upon them during the necessary disturbance of their tracks upon both bridges, while the repairs were in progress.

The wharf upon which the draw-tender's house stands has been taken by the City of Boston for Park purposes.

Canal or Craigie's Bridge.

A portion of this bridge situated between the draw and the Cambridge end has been strengthened by driving additional piles and adding new stringers and bolsters. The part repaired has

been a source of anxiety to the commissioners for some years, and different schemes have been considered for strengthening it.

Fifty-five new oak piles were driven from the surface of the bridge through holes cut in the flooring. The surface of the bridge was immediately restored to its former condition and the remainder of the work was done from below without interference with travel in any manner. The new and old piles alternate in the bents and are all capped together.

Fifty new stringers have been forced into place with screws and securely fastened, making this one of the strongest sections of the bridge.

The space under the bridge is flooded with foul water at high tide, and at low tide is exposed to the intolerable stench from the main sewer outlet. The work of securing the piles without interfering with travel was tedious and not without danger. It was done by a small force of men during the cooler weather in the fall, and the whole work is barely completed at this time.

A portion of the brick sidewalk was re-laid and the side bulkhead of the bridge was repaired at the same time by putting in new hard pine timber three hundred and twenty-eight feet in length.

Sections of the bridge have been rebuilt, widened and repaired at different times. Most of it is sound and in good order, while some portions are in indifferent condition and will continue to require careful attention and frequent repairs.

The draw-tender's house and the fence about it have been painted and are in good condition. The draw and machinery for turning it and for warping vessels are in good condition.

The draw piers and wharf upon which the draw-tender's house stands will require new timbers and new planking and other repairs next year.

The experiment has been tried of sheathing or planking the wearing surface of the draw with elm instead of spruce which has been used for many years. The surface covered with elm has already been in wear for a longer time than the usual life of a spruce covering, and is still in good condition.

Prison Point Bridge.

Only slight repairs have been made on this bridge during the

past year. The bridge and machinery for hoisting the draw are in very good condition.

The usual statement is given of the number of draw openings and the number of vessels which passed through.

WILLIAM J. MARVIN,
Commissioner for Cambridge.

Cambridge, Dec. 10, 1886.

Number of times the draws on West Boston Canal and Prison Point Bridges have been opened and the number of vessels which have passed through during the year.

Date.	West Boston Bridge		Canal Bridge.		Prison Point Bridge.	
	Number of Draw Openings	Number of Vessels Passed Through	Number of Draw Openings	Number of Vessels Passed Through	Number of Draw Open-ings.	Number of Vessels Passed Through.
December, 1885.....	183	273	235	262	8	8
January, 1886.....	23	39	78	81	8	9
February, "	10	15	37	42	4	7
March "	52	71	115	115	8	12
April, "	229	361	394	412	19	23
May, "	347	911	414	417	38	43
June, "	265	728	339	372	35	39
July, "	318	804	406	433	30	45
August, "	218	346	372	398	19	21
September "	219	325	414	431	27	30
October, "	221	329	418	426	31	34
November "	172	250	287	302	16	20
Total.	2257	4452	3509	3691	243	291

REPORT

OF THE

HARBOR-MASTER ON CHARLES RIVER, MILLER'S RIVER AND BROAD CANAL.

To the Honorable City Council of the City of Cambridge:—

THE undersigned herewith presents his report for the year ending November 30, 1886.

Dec. 16. Treasurer of Cambridge Coal Company called to have Schooner Amelia Smith moved so as to let Schooner Alice B. get into wharf to discharge cargo; did as requested.

April 7. Went through all draws by tug to see if buoys were in place and channel clear for passage of vessels.

April 12. Had Schooner C. Parker removed from bridge.

May 2. Went to East Cambridge to have stone removed from channel in front of Sanborn's wharf.

May 24. Had stone removed from dock in front of Ricker & Son's stone wharf.

May 26. Went to Miller's River near Prison Point Bridge to see if filling in of flats under Eastern Railroad tracks would have a tendency to fill up channel.

May 28. Notified by Harbor Commissioners of a hearing to be given Eastern Railroad Co. in regard to filling flats at Prison Point Bridge. Attended; the hearing was postponed on account of an informality.

May 29. Was requested by Hunnewell & Proudfoot of East Cambridge to clear channel so as to let vessels in to their wharf to discharge cargo; attended to this request.

June 3. At a hearing of the Harbor Commissioners at their office this day, protested against the proposed filling by the Eastern Railroad. The Commissioners and the Engineer of the Eastern Railroad made an appointment to meet me on the grounds. After meeting there and discussing the matter, the Commissioners gave the Eastern Railroad leave to withdraw.

June 22. Hunnewell & Co. requested me to go to their wharf to see about removing obstructions in the river; notified occupants of adjoining wharf to have them removed, which they agreed to do right away.

June 23. Went to East Cambridge; found dredges removing obstructions; the same day Schooner Mary A. Wood got in to Hunnewell & Co.'s wharf.

July 20. Went to Austin C. Wellington's Coal Co.'s wharf; had Schooner A. L. and Schooner Marcia Bailey move out of dock, to let Schooners Emma S. Briggs and Nathan Clifford pass down the canal.

July 21. Moved Schooners Pavilion and Lennie Howard from Wm. H. Wood & Co.'s wharf, so as to let Schooner Albeus pass out through Third street draw.

July 22. At request of Superintendent of Cambridge Gas Co. went to their wharf to make room for Schooner Alice Hunt to discharge cargo.

July 23. Had Schooners Native American and Emily haul out from Wm. H. Wood & Co.'s wharf to let Schooner Blackbird pass up the canal to Leander Greely's wharf.

Aug. 16. Notified Captain of Schooner Moselle to move out of the channel to let Schooner Maud S. pass down river.

Sept. 3. Removed Schooner Terrymore from Ricker's wharf to let Schooner Belle Hardy in to Wellington's wharf, also to let Schooner Harriet pass out.

Sept. 4. Had Schooner Marietta Stedman, lying at Gas Co.'s wharf, haul ahead, to let the tug Emily, Schooner Ivy Bell and two coal barges pass out, and the Schooner Golden Eagle pass up to Wm. H. Wood & Co.'s wharf.

Sept. 7. Let Schooner Marietta Stedman out of Broad Canal and Schooner Annie C. Moor in to Gas Co.'s wharf.

Sept. 20. Wm. H. Wood & Co. wanted two vessels removed so as to get Schooners A. Hooker and Wm. G. Legett in to their wharf; did as requested.

Sept. 21. Removed barge to let Schooner Atwood through Third Street draw.

Sept. 22. Went to East Cambridge to remove Schooner David Brown from channel to let Schooner J. L. Lamprey haul in to Hunnewell & Proudfoot's wharf.

Oct. 30. By request of Wm. H. Wood & Co., went to Third

Street draw to let Schooner Emily pass down and Schooner Luella pass up through draw.

Nov. 11. Captain of tug Roghan asked to have Schooner Abby H. Bently moved so that a coal-lighter could be towed to the American Rubber Co.'s wharf; did so.

Nov. 16. Went to Gas Co.'s wharf to move Schooner Alta M. Cole ahead from wharf to let Schooner Joseph Oakes and Schooner John Stroup out of Broad Canal.

Nov. 20. Capt. Burgess, draw tender on Third and Sixth Street draw, notified me that Schooner Abel W. Parke, consigned to Coleman Brothers, could not get through Third Street draw. I measured the Schooner. She was 32 feet 4 inches wide, and the opening in draw 32 feet. The Captain was obliged to go down through the canal to West Boston Bridge draw and was then towed to Bent's wharf to discharge his cargo which was done at quite a loss to the owners of the vessel. It would have been a great help to navigation, when the draw at Third Street was rebuilt if it had been widened. We had the same trouble last year in the opening of the River Street draw; vessels got stuck there and interrupted travel very much.

For reference in case of rebuilding other draws in Cambridge the following widths of draws in Boston and Cambridge are appended.

Respectfully submitted,

WILLIAM J. MARVIN.

Nov. 30. 1886.

APPENDIX C.

Table Showing the Widths of Openings for Vessels in all Bridges, provided with Draws, in the City of Boston, January, 1886.

Name of Bridge.	Location.	Number of Openings	Width.	
			Feet.	In.
Boston & Maine, R. R.	Boston to Charlestown	1	35	5
Boston & Maine, R. R.	Over Miller's River	1	35	7
Broadway . . .	Over Fort-Point Channel	1	43	3
Cambridge-st. . .	Ward 11 to Cambridge	1	30	4
Canal	Boston to East Cambridge . . .	1	35	10
Charles river . .	Boston to Charlestown	1	36	0
Chelsea (South Channel)	Charlestown to Chelsea	1	38	8
Chelsea (North Channel)	Charlestown to Chelsea	1	44	0
Chelsea st., (East Boston side)	East Boston to Chelsea	2	33	0
Chelsea (Chelsea side)	East Boston to Chelsea		34	3
Commercial-point .	Ward 24 to Chelsea .	1	24	0
Congress-st. (Boston side)	Over Fort-Point Channel	2	43	4
Congress-st. (South Boston side)	Over Fort-Point Channel		43	11
Dover-st. . . .	Over Fort-Point Channel	1	36	0
Eastern R. R. . .	Boston to Charlestown	1	35	10
Eastern R. R. . .	Over Miller's River .	1	35	6
Essex-st. . . .	Ward 11 to Cambridge	1	30	10
Federal-st. . . .	Over Fort-Point Channel	1	36	0
Fitchburg R. R. . .	Boston to Charlestown	1	36	0
Fitchburg R. R. (for teaming freights . .	Boston to Charlestown	1	36	3
Grand Junction R. R.	Ward 11 to Cambridge	1	32	0
Grand Junction R. R.	East Boston to Chelsea	1	34	6
Granite	Ward 24 to Milton .	1	30	11
Lowell R. R. (freight)	Boston to East Cambridge	1	35	8
Lowell R. R. (passenger)	Boston to East Cambridge	1	35	10
Malden	Charlestown to Everett	1	43	4
Meridian-st. (East Boston side	East Boston to Chelsea	2	59	0
Meridian-st. (Chelsea side)	East Boston to Chelsea	2	59	0
Mt. Washington ave. Boston side . . .	Over Fort-Point Channel	2	42	3
Mt. Washington ave. (So. Boston side . .	Over Fort-Point Channel	1	42	4
Neponset . . .	Ward 24 to Quincy .		31	1
New York & New England R. R. (Boston side .	Over Fort-Point Channel	2	40	7
New York & New England R. R. (So. Boston side	Over Fort-Point Channel		40	7
New York & New England R. R.	Over South Bay .	1	28	4
North Beacon-st. .	Ward 11 to Watertown	1	30	3
North Harvard-st. .	Ward 11 to Cambridge	1	31	10
Old Colony R. R. .	Over Fort-Point Channel	1	36	0
Old Colony R. R. .	Ward 24 to Quincy .	1	35	11
Prison Point . . .	Charlestown to Cambridge	1	35	7
Warren	Boston to Charlestown	1	36	4
West Boston (Boston side)	Boston to Cambridge	2	35	8
West Boston (Cambridge side	Boston to Cambridge		36	0
Western-ave . .	Ward 11 to Cambridge	1	31	3
Western ave. . .	Ward 11 to Watertown	1	30	0

REPORT

OF THE

CAMBRIDGE WATER BOARD.

To the Honorable City Council of the City of Cambridge:—

THE Water Board as required by the city ordinance herewith submits its twenty-second annual report, being for the year ending November 30, 1886.

Total Cost of the Water Works.

Cost of the Works, Nov. 30, 1885, as per last year's report.	$2,087,378 49
Expended during the year ending Nov. 30, 1886 on construction account	206,664 90
Making the total expenditure	$2,294,043 39

Water Bond Account.

Whole amount of bonds issued	$2,256,900 00
Amount paid from Water Loan Sinking Fund	391,400 00
Leaving unpaid Water Loan	$1,865,500 00
From this deduct the present value of the Water Loan Sinking Fund as per Trustee's Account	892,005 97
Leaving the balance of Water Loan yet to be provided for by the Sinking Fund . . .	$973,494 03

Statement in brief showing the transactions in connection with the Water Works for the year ending Nov. 30, 1886.

General Construction Account.

RECEIVED.

Amount of Water Bonds issued	$18,000 00	
Premium on sale of same . .	232 20	
Refund of overcharge	1 50	
From excess of rates, fines, etc.	1,048 98	
		$19,282 68

EXPENDED.

Amount expended on general construction account	$19,282 68

Stony Brook Construction Account.

RECEIVED.

Balance of appropriation from 1885	$15,443 63	
Amount of Water Bonds issued	125,000 00	
Premium on sale of same . .	322 50	
Sale of wood at Roberts basin .	78 75	
		$140,844 88

EXPENDED.

On Stony Brook construction account	$122,652 42	
Balance unexpended to new account	18,192 46	
		$140,844 88

Fresh Pond Land Construction Account.

RECEIVED.

Amount of Water Bonds issued on this account	$90,000 00	
From sale of old material . .	2,750 00	
		$92,750 00

EXPENDED.

For purchase of sundry estates bordering on Fresh Pond, examination of titles, etc., .	$64,729 80
Balance unexpended to new account . . .	28,020 20
	$92,750 00

Water Rates, Fines and Supply Account.

RECEIVED.

From water-rates	$200,600 13	
Less rates refunded	1,195 70	
		$199,404 43
Shutting off and letting on water, seals and fines . . .	424 90	
From supply account. . . .	7,273 43	
Accrued interest on $43,000 Water Bonds dated Nov. 1, issued Dec. 3, 1886	135 90	
		207,238 66

EXPENDED.

For general construction account	$1,048 98
For Maintenance account . .	29,858 33
For supply account	5,943 62
For interest on Water Loan . .	99,015 00
Paid into Sinking Fund, being three per cent. on $1,922,500 Bonds outstanding	57,675 00
Surplus of 1866, to Sinking Fund	13,697 73
	207,238 66

Comparative Receipts.

Water-rates for the year ending Nov. 30, 1886	$199,404 43
Water-rates for the year ending Nov. 30, 1885	185,544 36
Showing excess of Water-rates in 1886 . .	13,860 07

Water Supplied.

Amount of water pumped in 1886 . .	1,235,558,878 gallons
Amount of water pumped in 1885 . .	1,125,252,287 gallons
Showing an increase in 1886 of . .	110,306,591 gallons

This is the largest amount of water ever pumped in one year, showing a daily average increase of 302,209 gallons, over the preceding year.

In 1885, the daily average increase over 1884 was	448,968 gallons
In 1886, the daily increase as above shown was	302,209 gallons
Making the daily increase in two years to be	751,177 gallons

Surely no argument could be more conclusive that our additional water supply will come none to soon for the requirements of our city.

The water during the past year has been used as follows:—

Amount sold by meter and used for watering the streets	317,048,175 gallons
Amount used for domestic and other purposes	918,510,703 gallons
Making the total	1,235,558,878 gallons
Daily average pumping	3,385,093 gallons
Divided as follows:—	
Daily average high service	260,087 gallons
Daily average low service	3,125,006 gallons
	3,385,093 gallons

The high service is furnished to the highest places in our City through the Stand pipe at the Reservoir, while the low service is supplied direct from the Reservoir, there being about forty feet difference in the level of these two scources of supply.

Rainfall and Height of Water in the Pond.

Months.	Rainfall.			Water in the Pond below High-water Mark.		
	1884.	1885.	1886.	1884.	1885.	1886.
	Inches.	Inches.	Inches.	Feet.	Feet.	Feet.
December, 1885	2.94	4.60	1.82	11.10	7.68	10.13
January, 1886	4.81	5.43	6.41	10.67	7.71	9.67
February, "	6.67	2.94	7.35	8.89	7.61	6.29
March, "	4.91	1.06	3.49	5.90	6.72	3.83
April, "	4.22	3.61	2.43	2.99	6.42	3.21
May, "	3.18	3.77	3.92	3.01	6.35	3.55
June, "	3.79	4.10	1.48	3.68	6.94	4.31
July, "	4.56	1.72	3.54	4.33	7.91	5.45
August, "	4.76	5.21	3.20	4.83	9.07	6.40
September, "	.70	1.78	4.64	5.68	9.95	7.59
October, "	2.90	5.56	3.62	6.67	10.69	8.87
November, "	2.63	9.20	4.22	7.34	10.69	9.62
Total for the year.	46.06	48.98	46.12	6.26	8.15	6.58

It will be seen by this table that while the amount of water pumped this year was more than ever before, yet we had about one foot more water in the Pond at the end of the year. This is because of the large amount caught last spring, so that in the month of April this year there were over three feet more water in the Pond than in April 1885, and yet the Pond lacked more than three feet of being full this year.

Fresh Pond Reservoir.

The work of preparing Fresh Pond as a Reservoir and Storage Basin for Stony Brook water which was so well begun last year, has been continued this year on a still larger scale, so that now we may say that the Reservoir is nearing its completion. We will present what has been done under different heads, to wit:—

First. Land purchased around the Pond. We have purchased, and paid for, the following estates on the borders of the Pond:

Lot of Market National Bank of Boston . . .	$25,000 00
Lot of Charles Moore.	1,500 00
Lot of Amos Stone	2,860 00
Lot of Sargent estate (F. J. R. Bullard) . . .	2,463 18
Lot of Bright estate (Artemus White) . . .	6,262 62
Lot of Thomas J. Hittinger	2,440 00
Lot of Tudor Heirs (S. E. Sewall *et. al.*, Trustees,)	1,250 00
Lot of Warren Institution for Savings	17,500 00
Lot of R. D. Smith, Trustee, ...	2,000 00
Lot of Mary Black	3,000 00
And examination of titles, stone bounds, etc. .	454 00
	$64,729 80

Nearly all these purchases were made at their tax appraisal.

We have taken under the power granted by the Legislature, portions of the following estates bordering on the Pond, after having tried to procure the land we needed by negotiating with the owners, but we failed in our efforts to secure it of them at any reasonable price. Say land of "John E. Somers," "The estate of William Gay," and "The Middlesex Institution for Savings." In settling for these lands taken we must await the action of those from whom the land has been taken. In our opinion if a settlement is made at any reasonable price, the unexpended balance of the appropriation made by the City Council for this purpose will be nearly enough to pay for the land taken, and pay for Child's Lot to be acquired hereafter.

The results of our purchases, and takings, may be summed up as follows: The entire border of Fresh Pond before the dams were made which cut off the nooks, measured about sixteen thousand feet. The city is now the owner of all this border, with the exception of the frontage on the Pond of Childs, Hittinger, and the Tudor Ice Company, in all measuring sixteen hundred and seventy feet, in other words the city now owns about nine-tenths of the shore of the Pond, and such other land contiguous thereto as seemed necessary for the purpose of completing the Reservoir and preserving the purity of the water therein.

Second. Roadway around the borders of the Ponds.

The roadway which had been built last year partly around the shore of the Pond, has been continued this year until it has been completed all around the Pond with the exception of 1540 feet

in front of Hittinger's, and the Tudor ice houses. The same has been graded from thirty to forty feet wide, and put in good condition for pleasure driving; thus a carriage road on the borders of the Pond is now made nearly two and one-half miles long, which, when it becomes known to our citizens no doubt will attract many visitors; indeed, already some of our best citizens have been up there during the past season while the work was progressing, and we have heard many words of commendation on the improvements being made, while we have yet to hear the first word of dissatisfaction from any one.

Third. Riprapping the shores with stone.

While the roadway makes a very pleasant drive, and adds much to the beauty of the surroundings of the Reservoir, yet in fact the making of the roadway has been only incidental to preparing the shore with a proper embankment upon which stones could be placed to make a clean and proper basin in which to hold the water for our daily use. This riprapping follows the roadway all the way, and the banks are stoned in front of Hittinger's and Childs' ice houses, leaving only about 1000 feet of the shore in front ofthe Tudor ice houses, that is not thus riprapped and finished. We hope to make some arrangements with the Boston Ice Company who have bought the Tudor ice houses, so that this short piece can be graded, and finished to correspond with rest of the shore of the Reservoir. In making these improvements nearly all the material, except the stone, has been taken from the bottom, and the banks of the Pond, which were covered with water at a full pond, so that while the lines and curves of the shore have been made true and uniform, adding much to the beauty of the border and roadway, we have at the same time been adding to our storage capacity by taking the material out of the Pond to do it.

During the latter part of the season a dam was built across the entrance of Black Nook, of which so much has been said in years past, and this place will no longer pollute our water supply.

We have thus set forth what has been done to give the city a beautiful Reservoir of 160 acres, properly prepared and secured in its surrounding, capable of holding above grade 9, or the top of the conduit leading to our Pumping Station 400,000,000 gallons of water. If Cambridge Nook and Boat House Nook, were

deepened two or three feet we should have all we could desire in Fresh Pond Reservoir.

Stony Brook Dam and Basin.

The work has progressed in some parts of it during the whole year, but it is not yet done. We had hoped that in this report we could have reported the work completed and ready to furnish water to fill our Reservoir at the next spring's snow-melting. The work of cleaning out and shaping the basin is all done. The grading of the dam is nearly done, about one-third of the face of the dam is paved. The stone work of the gate-house and overflow dam are the most behind. Our contractors claim that the delay in the stone work has been the fault of the party who contracted with them to furnish the stone last summer. New arrangements have been made and the stones are now coming forward, and the work will be pushed as fast as the weather will permit.

The pipes are all laid and connected with the gates at the Gate House. We are now filling the pipes, by pumping into them with a steam fire engine, our object being to test them under 100 pounds pressure in order to see whether everything is right on the pipe line, our contract for pipe requiring them to stand this test.

The following statement will show what has been spent on "Stony Brook construction account," up to this time.

Work done at Stony Brook Basin and Dam, including the laying of the Conduit to Fresh Pond.

Stony Brook Construction Account.

RECEIVED.

1884, appropriation by the City Council	$500,000 00	
Premium and accrued int. on $12,000 Water Bonds . . .	619 74	
1885, Premium and accrued int. on $288,000 Water Bonds .	19,550 40	
Commonwealth of Mass. ($\frac{1}{2}$ expense of survey)	15 73	
1886, Premium on $25,000 Water Bonds	322 50	
Sale of wood at Roberts Basin	78 75	
		$520,587 12

EXPENDED.

1884, Sundry bills paid and work done	$12,619 74	
1885, Sundry bills paid and work done	$292,122 50	
1886, Sundry bills paid and work done	$122,652 42	
Total expenditures to Nov. 30, 1886	$427,394 66	
Balance of appropriation . .	93,192 46	
		520,587 12

Of the above amount expended, $33,803.75 has been spent, in and around Fresh Pond in transforming it from a water supply into a Reservoir and Storage Basin.

Estimate for completing "Stony Brook construction account" exclusive of land and water damages.

Amount withheld from Woods & Co.	$3,000 00	
Draft due H. H. Pike & Son, Nov. 30, 1886	6,717 60	
Amount withheld on work performed	28,286 76	
Estimated amount to finish contract at Dam	15,000 00	
		$53,004 36

In the foregoing statement it will be noticed that nearly $34,000 of the money spent on "Stony Brook construction account" has been spent in and around Fresh Pond in preparing it as a suitable Storage Basin and Reservoir. In the original estimates presented to the City Council, of the cost of getting Stony Brook water nothing was named for this work around and in the Pond, which has since become a necessity in connection with the "Stony Brook scheme," and on this account the Water Board invited the City Council at different times as the work around the Pond progressed, to go upon the ground, and we showed them

what we thought ought to be done, and in all cases have had their approval before going on with the work. We call attention to this now as it seems as if the original estimates would fall somewhat short of the actual expenditure on the Stony Brook scheme, and this expense around and in Fresh Pond will account for a large part of the difference between the estimates and expenditures.

No settlements have been made for water, or land damages in Waltham or Weston. Wherever we go the demand for land increases, and the price asked for it, exceeds any former experiences. Several suits have been brought under the Act and are now pending in the courts.

General Remarks.

It seems to us that one thing more ought to be done in Fresh Pond to complete it as a first class Reservoir and Settling Basin, and that is to dig out and lower the bottom of Cambridge and Boat House Nooks. The present grade of the bottom of these nooks is about 9, from the city base. At present they are bare, and from one to three feet above the water in the Pond. We cannot expect to raise the water much if any above grade 16 when the Pond is full, and we calculate that the range of the height of the water in use, after our works are complete will be between grades 13 and 16. This will give us a depth of water over these nooks of from four to seven feet. Boston and other places have had much trouble on account of shallow flowage, and they have been obliged to go to great expense to remedy this trouble. It is well settled that from seven to eight feet is as little depth of water as there ever ought to be in any Reservoir for domestic use, for the reason that in any shallow water vegetation will grow, and then when decayed will contaminate the water, and also that in shallow water different forms of algea will germinate, which have given great trouble to water works in other places, and have been the worst kind of contamination that we have had to contend with. Under these circumstances we recommend that these shallow nooks be excavated from one to three feet deeper than they now are. Early next spring seems to us to be a most favorable time to do this work. The water in the Pond is now very low and is going down every day. In connection with introducing Stony Brook water, we can keep

the water down in the Pond until the work if begun, is finished, and our Reservoir would then be properly finished, and all we could wish it to be. If this work is not done now, we shall never have another such opportunity to do it to advantage, and we think in the near future the fact that it was not done will be much regretted. The expense will be considerable, but the ultimate advantage will far outweigh the expense.

In connection with this work the shore line in front of the Tudor ice houses, could be conveniently graded, and made to correspond with the border around all the rest of the Pond, and the other material taken out could be used on land owned by the city near by that needs grading up, and deposited on low lands in the immediate vicinity which the owners would be glad to have filled up which would be an indirect benefit to us. If this was done it would furnish work for a large number of Cambridge men and teams at a time of year when work is scarce and much needed. No doubt the work could be done then at a reasonable price.

The surroundings of Fresh Pond are for the most part pleasant and attractive. In the year to come the low lands around the Pond which are below high-water mark, should be filled up and graded. When this is done, and Fresh Pond Drive or Avenue is made as contemplated in our purchases, and partly laid out, Cambridge will not only have one of the finest reservoirs, but also one of the most beautiful and attractive water parks and pleasure drives to be found in the country.

Financial Condition.

Two years ago when the question of accepting the Stony Brook account was up for discussion, some doubts were felt as to whether the Water Works could carry the additional debt it would create, and continue to pay its own way as it had done heretofore. We believed that it could be done, even if the expense should exceed the estimates made at the beginning of the work. The experience of the past two years has confirmed us in our views then expressed. The growth of the city and the increased demand for water, and the consequent increase of the income from water-rates, has exceeded our calculations then made. If the water-rates are left unchanged for a few years until the works are complete, we think the Water Works will

pay its current expenses, the interest on its debt, and through its Sinking Fund pay the principal of the Water Bonds when due.

Work to be Done.

The work to be done the ensuing year and for which we shall in due time ask for appropriations will be :—

First. To enable us to excavate some portions of Fresh Pond to a lower grade as herein fully set forth, and finish out the embankment around the Pond, and riprap the same.

Second. To make some needed repairs in the wall of our Reservoir, and build a small chronograph house near the stand pipe for nightly observations of the consumption of water in connection with the detection of leaks and waste of water.

Third. For general construction account.

Fourth. For maintenance account.

Fifth. For supply account.

During the coming year our Distributing Reservoirs will have to be emptied and cleaned out.

For further particulars and details in regard to what has been done the past year, and the present condition of the works, the property on hand and other matters, we would refer you to the Reports of our Superintendent and Registrar, made to this Board, which we herewith submit as part of our Report, and we also submit the reports of the Committee on Accounts, the Treasurer and Auditor.

As we draw our Report to a close, we wish to tender our thanks to the City Council for their confidence and ready coöperation in all our work, they seeming to realize with us that what we are doing is a wise and well directed expenditure of money, not only to supply our present needs, but also to provide for those who will come after us. It is our ambition to finish the work now nearing completion, so well that even if our names are forgotten, our works will remain as a lasting monument to our foresight, and devotion to the best interests of the city.

All the different departments of the Water Works in their administration, continue in good condition and working order. The regular officers and employés have been faithful in the discharge of their duties. The work at Fresh Pond has required

and received the personal attention and constant supervision of our Superintendent; his former business made him well adapted to carry on that work, and when done, will itself speak to his praise.

Our Registrar has the work in his office well in hand, and he keeps all matters connected with the Water Works that come under his eye so arranged, that he can readily give any desired information pertaining to his department.

We have always received from the City Engineer, and the assistant in his office, all the help we have asked, that it was in their power to render, aud we cheerfully testify to their courtesy and prompt response to our calls.

C. W. KINGSLEY,
L. M. HANNUM,
JAS. M. W. HALL,
K. S. CHAFFEE,
JOHN F. O'BRIEN,
} *Water Board.*

REPORT

OF

THE WATER REGISTRAR.

WATER REGISTRAR'S OFFICE,
CAMBRIDGE, Dec. 10, 1886.

To the Cambridge Water Board:—

IN compliance with the requirement of the City Ordinance, I present the twenty-second annual report of the operations of this department, showing the receipts, expenditures, and abatements, together with a statement of the number of water-takers, fixtures, etc., for the year ending Nov. 30. 1886.

Amount of bills remaining unpaid Nov. 30, 1885:—

Water-rates	$78 29
Meter-rates	349 40
Supplies and repairs	700 10
	$1,127 79

Amount of bills placed in hands of City Treasurer for collection from Nov. 30, 1885 to Nov. 30, 1886:—

Water-rates	$163,924 47	
Meter-rates	39,549 50	
Supplies and repairs	7,975 05	
Off and on water, seals and fines	424 90	
Total bills		$213,001 71

There have been collected:—

Water-rates	$200,600 13	
Off and on, seals and fines	424 90	
Supplies and repairs	7,273 43	
Total collections	$208,298 46	

There have been abated:—

Water-rates	$2,977 43	
Amounts carried forward	$211,275 89	$213,001 71

Amounts brought forward .		$211,275 89	$213,001 71
Supplies and repairs . . .		20 94	

There remain unpaid :—

Water-rates	$65 90		
Meter-rates	258 20		
Supplies and repairs	1,380 78		
		$1,704 88	
		$313,001 71	$213,001 71

Expenditures.

Construction account (Stony Brook)		$122,652 42	
Construction account (Fresh Pond Land purchase)		64,729 80	
Construction account (general)		19,282 68	

Maintenance account viz :—

Care and repairs	$15,673 41		
Pumping service	10,737 08		
New pumping service (salaries, coal, etc.)	211 44		
Office expenses	3,236 40		
		$29,858 33	
Supply and repair account		5,943 62	
Total			$242,466 85

Abatements.

Water-rate bills to the amount of	$2,977 43	
Supply and repair bills to the amount of . .	20 94	
Total		$2,998 37

Refunds.

Water-rates have been refunded to the amount of	$1,195 70	
Which amount deducted from receipts . . .	200,600 13	
Leaves net receipts for water	$199,404 43	
Add off and on, seals and fines	424 90	
Makes net receipts of rates, fines, etc. . . .	$199,829 33	

Off and On.

Water has been shut off for non-payment of rates, or per order on account of vacancy, and seals have been applied to fixtures by request of owners or occupants, as follows :—

Supplies shut off in 1886	416
Supplies let on, shut off in 1886	325
Supplies let on, shut off in previous years	50
New supplies let on	342
Seal-locks applied to fixtures in 1886	385
Seal-locks removed, put on in 1886	154
Seal-locks removed, put on in previous years	115

Statement of the yearly revenue received from water-rates, since the purchase of the Works by the city:—

From	April 28, 1865	to	Dec. 1, 1865		$32,367 19
"	Dec. 1, 1865,	"	1, 1866		40,073 27
"	" 1, 1866,	"	1, 1867		52,733 62
"	" 1, 1867,	"	1, 1868		63,747 42
"	" 1, 1868,	"	1, 1869		76,149 30
"	" 1, 1869.	"	1, 1870		92,606 95
"	" 1, 1870,	"	1, 1871		111,782 65
"	" 1. 1871,	"	1, 1872		127,201 30
"	" 1, 1872,	"	1, 1873		146,117 32
"	" 1, 1873,	"	1, 1874		153,634 27
"	" 1, 1874,	"	1, 1875		138,880 37
"	" 1, 1875,	"	1, 1876		179,166 76
"	" 1, 1876,	"	1, 1877		154,843 59
"	" 1, 1877,	"	1, 1878		157,443 91
"	" 1, 1878,	"	1, 1879		164,681 90
"	" 1, 1879,	"	1, 1880		173,325 49
"	" 1, 1880,	"	1, 1881		170,062 73
"	" 1, 1881,	"	1, 1882		177,430 80
"	" 1, 1882,	"	1, 1883		179,361 89
"	" 1, 1883,	"	1, 1884 (10 months)		161,526 27
"	" 1, 1884,	"	1, 1885		185,544 36
"	" 1, 1885,	"	1, 1886		199,404 43

Comparative Statement.

	1885.		1886.	
Construction Acc't (Stony Brook.)				
RECEIVED.				
From bonds issued (par value)	$288,000 00		$125,000 00	
From premium on bonds	19,550 40		322 50	
Commonwealth of Mass.	15 73			
Sale of wood at Roberts Basin			78 75	
Balance of Appropriation		$307,566 13	15,443 63	$140,844 88
EXPENDED.				
Sundry bills	$292,122 50		$122,652 42	
Balance of bonds issued	15,443 63	$307,566 13	18,192 46	$140,844 88
Construction Acc't. (Fresh Pond Pond Land Purchase.)				
RECEIVED.				
From bonds issued (par value)			$90,000 00	
Sale of old material			2,750 00	$92,750 00
EXPENDED.				
Purchase of sundry estates, examination of titles, etc.			$64,729 80	
Balance of appropriation			28,020 20	92,750 00
Construction Acc't. (General.)				
RECEIVED.				
From bonds issued (par value)			$18,000 00	
From premium on bonds			232 20	
Refund of overcharge			1 50	
From excess of receipts from rates, fines, etc		$12,434 32	1,048 98	$19,282 68
EXPENDED.				
Sundry bills		$12,434 32		$19,282 68
Maintenance Account.				
RECEIVED.				
Accrued interest on Water Bonds			$135 90	
Rates, fines, etc		$185,991 86	199,829 33	$199,965 23
EXPENDED.				
Care and repairs	$29,914 51		$29,858 33	
Interest on Water debt	92,725 00		99,015 00	
Paid to Sinking Fund Commissioners	52,425 00	$175,064 51	57,675 00	$186,548 33
Excess of receipts		$10,927 35		$13,416 90
Supply Acconnt.				
Received		$6,250 55		$7,273 43
Expended		4,491 97		5,943 63
Excess of receipts		$1,758 58		$1,329 81

1885.	Maintenance Account, excess of receipts	$10,927 35
	Supply account, excess of receipts	1,758 58
	Excess of total receipts over expenditures	$12,658 93
	Expended on Construction Account, (general)	12,434 32
	Balance due Sinking Fund	$251 61
1886.	Maintenance Accouut, excess of receipts	$13,416 90
	Supply Account, excess of total receipts	1,329 81
	Excess of total receipts over total expenditures	$14,746 71
	Expended on Construction Account (general)	1,048 98
	Balance due Sinking Fund	$13,697 73

The excess of receipts for 1886, as shown in the above comparative statement, amounting to $13,697.73, has been carried to the Sinking Fund, as required by law.

Beside the manufactories, etc., supplied by meter, water is now supplied to 13,414 families, 853 stables, with 2,338 horses, and 237 cows, 234 shops, 412 stores and offices, by the following fixtures, viz :—

16,363 faucets.	17 hopper-closets.
4,297 wash-basins.	95 urinals.
2,920 wash-tubs.	46 yard hydrants.
2,415 bath-tubs.	5 fountains.
6,831 pan-closets.	3 tumbler-washers.
856 slop-closets.	1,209 hand-hose.

Also,

612 fire-hydrants (besides 4 on private premises).
13 fire reservoirs.
16 drinking-fountains in public squares.

The above is exclusive of the school-houses, engine-houses police-stations and other city buildings, for which special rates are charged, except where meters are located.

The usual house to house inspection has been made during the year, and from this inspection, aided by reports from plumbers, a considerable amount of water-rates has been added and collected for fractional parts of the year.

Respectfully submitted,

WALTER H. HARDING,

Registrar.

REPORT

OF THE

COMMITTEE ON ACCOUNTS OF THE CAMBRIDGE WATER BOARD.

We have examined the abstract of accounts as presented to us by the Water Registrar, covering the records of the past year. We have compared it with the statements submitted to us the City Treasurer and Auditor, and we find them to be correct and in agreement. Annexed is the financial statement, in brief, presented to us by the Water Registrar, and verified by us: —

Amount of bills in hands of City Treasurer, Nov. 30, 1885: —		
For water-rates	$427 69	
For supplies and repairs	700 10	
		$1,127 79
Amount of bills delivered to the City Treasurer for collection during the year ending Nov. 30, 1886: —		
For water-rates	$163,924 47	
For meter-rates	39,549 50	
For supplies and repairs	7,975 05	
For off and on, seals and fines	424 90	
		$211,873 92
Total bills		$213,001 71
Of these amounts the Treasurer reports as collected	$211,296 83	
Less refunded	1,195 70	
Less abated	2,998 37	
	$4,194 07	
Total net collections	$207,102 76	
Add refunded and abated, as above	4,194 07	
Balance uncollected, Nov. 30, 1886	1,704 88	
		$213,001 71

We would suggest that the present system of keeping the water accounts be so modified that the Treasurer, if it be found

practicable by the Finance Committee, shall receipt to the Registrar for all bills sent to him (the Treasurer) for collection.

JAS. M. W. HALL,
WM. E. RUSSELL,
JOHN H. CORCORAN, } *Committee on Accounts.*

CAMBRIDGE, Dec. 1, 1886.

CITY OF CAMBRIDGE,
OFFICE OF CITY TREASURER,
December 17, 1886.

To the Committee on Accounts of Cambridge Water Works: —

There nas been collected during the year ending Nov. 30, 1886, for account of water works, rates, fines, &c. .		$204,002 46
And during the same time for supply account		7,294 37
		$211 296 83
There has been paid by the City Treasurer for account of abatements on water bills . .	$2,998 37	
And for refunds on water account	1,195 70	
		$4,194 07
Leaving net collections for both accounts		$207,102 76
The uncollected water bills in my hands are		324 10
The uncollected supply account bills in my hands are . .		1,380 78

Respectfully,

WM. W. DALLINGER,
City Treasurer.

CITY OF CAMBRIDGE,
December 1, 1886.

STATEMENT TAKEN FROM THE AUDITOR'S LEDGER.

WATER WORKS, (RATES, FINES, ETC.)

Amount of uncollected bills in Treasurer's hands Dec. 1, 1885		$427 69
Amount of bills placed in Treasurer's hands to Dec. 1, 1886,		203,898 87
Total		$204,326 56
Amount collected by City Treasurer to Dec. 1, 1886		204,002 46
By balance uncollected Dec. 1, 1886		$324 10
Abatements . . .	$2,977 43	
Refunds	1,195 70	

WATER WORKS (SUPPLIES).

Amount of uncollected bills in City Treasurer's hands Dec. 1, 1885	$700 10
Amount of bills placed in City Treasurer's hands to Dec. 1, 1886	7,975 05
Total	$8,675 15
Amount collected by City Treasurer to Dec. 1, 1886	7,294 37
Balance uncollected Dec. 1, 1886	1,380 78
Abatements	20 94

HARRY T. UPHAM,

Auditor of Accounts.

ANNUAL STATEMENT OF THE WATER REGISTRAR TO THE COMMITTEE ON ACCOUNTS, DECEMBER 1, 1886.

Water-rates unpaid Nov. 30, 1885		$427 69	
Bills placed in hands of City Treasurer, for collection from Dec. 1, 1885, to Dec. 1, 1886:			
Water-rates from annual ledger	$149,381 35		
Water-rates from fractional ledger	14,543 12		
Water-rates from meter ledger	39,549 50		
Off and on water	344 65		
Seals	80 25		
		203,898 87	
Total bills on rates, fines, etc.		204,326 56	
Supply and repair bills unpaid Nov. 30, 1885	700 10		
Supply and repair bills placed in hands of City Treasurer for collection from Nov. 30, 1885, to Nov. 30, 1886	7,975 05		
		8,675 15	
Total bills			213,001 71
There has been collected, annual ledger	147,815 14		
There has been collected, meter ledger	39,628 70		
Amount carried forword	187,443 84		

Amount brougnt forward . .	187,443 84		
There has been collected, fractional ledger	13,156 29		
There has been collected, off and on, and fines	344 65		
There has been collected, seals . .	80 25		
Total collections on rates, fines, acc't. . .		201,025 03	
Collections on supply and repair accounts . .		7,273 43	
Total collections . .		208,298 46	
There have been abated, water rates	$2,977 43		
There have been abated, supplies and repairs	20 94		
		$2,998 37	
There remain uncollected, water rates	324 10		
There remain uncollected, supplies and repairs	1,380 78		
		1,704 88	
			213,001 71
Total collections.	$208,298 46		
Less refunds	1,195 70		
Total net receipts		$207,102 76	

Attest:

WALTER H. HARDING,
Registrar.

REPORT

OF THE

SUPERINTENDENT OF THE WATER WORKS.

CAMBRIDGE, Nov. 30, 1886.

To the President and Members of the Cambridge Water Board :—

GENTLEMEN :—The annual report of your Superintendent, upon the condition of the works and the operations of the past year, is herein presented.

The total amount of water pnmped was 1,235,558,878 gallons, Coal consumed per million gallons pnmped, 1,602$\frac{2}{3}$ pounds. Water sold by meter, and that used for watering streets, 317,-048,175 gallons, leaving as the amount for domestic use 918,510,-703 gallons. Number of gallons daily for each inhabitant on whole amount pumped, $54\frac{6}{10}$ gallons. Number of gallons daily for each inhabitant on amonnt for domestic use, $40\frac{59}{100}$ gallons.

Conduit, Wellington Brook, Little and Spy Ponds.

No inspection of the Conduit has been made as we are so near the time when it will cease to be used as formerly.

Water was taken from Wellington Brook, January 13, to February 20, and from the filter basin January 13 to March 31.

Little Pond gates were opened January 13th and shut on the 15th.

By request of the ice men, the small gate on Spy Pond was opened January 15, and closed on the 20th, in order to fill Little Pond to high water mark to facilitate the cutting of ice when it should freeze over.

Fresh Pond.

The city having purchased the lot of land, about five acres in area, on the east side of Fresh Pond, near the depot, upon which the large brick ice-house formerly stood, a driveway has been built to and around Fresh Pond Grove, and a roadway has been commenced at the beginning of the above road which will run parallel with the Fitchburg Railroad to Fresh Pond Lane.

Both roads will connect with the driveway already built. The remainder of the lot has been laid out, and partially graded for a Park, which, when completed, will greatly add to the appearance of that locality.

The low land on the south side of the Grove, back of where the old Boat-houses stood, has been filled to grade. All of the material on the south shore and in the vicinity of Boat House Nook, that had been carted out of the Pond in former years, was used in building the roadway around the Grove, getting rid of the unsightly material.

The driveway from Boat House Nook to Eames' Nook Dam has been widened to 30 and 40 feet. The banks of the cut leading to Holworthy Street from the south side of the Pond have been sloped and the roadway gravelled. The grading of the roadway and riprapping the slopes on the west side of the Pond between Eames and Bright's Nook Dams have been completed, also the dam across Bright's Nook has been widened to 40 feet. Gage Nook has been filled.

A dam across Black's Nook and a roadway on the north shore have been commenced and at this date are nearly completed. As the material for all the grading has been taken out of the Pond, the shore lines have been very much improved and the Pond deepened. It is a source of much satisfaction to know that Black's Nook is now cut off from the Pond. There is now a roadway, from 30 to 40 feet wide, entirely around the Pond, a distance of $2\frac{3}{4}$ miles, except where the Hittinger and Tudor ice houses now stand.

The water in Fresh Pond reached its highest point May 12, *viz :*—13.74 feet, and its lowest, Dec. 1, *viz :*—6.62 feet. The average height for the year was 10.27 feet. The water has been analyzed three different times during the year showing the result that it has maintained its usual purity.

The rainfall for the year has been 46.12 inches.

Pumping Works.

No repairs have been needed on either the engine-house or coal-shed. Four new boilers, built by Campbell & Son, have been set, two to take the place of old ones deemed unsafe to use longer, and the two extra ones to give steam capacity for running both pumps when necessary.

The auxiliary pumps were stopped January 30, and started again October 24. There are now three pumps on the borders of the Pond, two Follansbee pumps and one 12in. centrifugal.

The engine-house lot and Tudor Park have received necessary care. The apology for a fence has been patched up, but it is a question if it would not be real economy to build a new and suitable one.

Reservoirs.

Nothing has been done except to cut the grass and keep the walks graded. No change in the walls is perceptible. As noted in preceding reports, the high wall should receive attention and a chronograph house should be built. The Reservoir basins should be cleaned out the coming season.

High Service.

No extension of this service has been made. It is working perfectly and no complaint of lack of water, within the territory covered by this system, has been made.

Main Pipe.

At Stony Brook about 650 feet of pipe has been laid on the berme of the dam, connection made at the Gate-house, and the line is now complete from the Brook to Fresh Pond.

Main pipes have been laid in the following streets:—401 ft. of 4-in. in Agassiz St., 6½ ft. of 6-in. in Antrim St., 47 ft. of 2-in. in Athens Court, 160 ft. of 4-in. in Auburn St., 7 ft. of 6-in. and 396 ft. of 4-in. in Bates St., 40 ft. of 4-in. in Bath St., 243½ ft. of 4-in. in Bay St., 498 ft. of 4-in. and 13 ft. of 6-in. in Bellevue Ave., 275 ft. of 6-in. in Blake St., 24 ft. of 4-in. in Blanch St., 877½ ft. of 6-in. (renewal) and 45 ft. of ¾-in. in Blackstone St., 118 ft. of 4-in. in Brewery St., 2 ft. of 4-in. in Brookline and Auburn Sts., 251 ft. of 1½-in. in Concord Ave., 150 ft. of 6-in. in Crescent Ave., 4 ft. of 6-in. in Divinity Ave., 76 ft. of 4-in. in Donnell St., 125 ft. of 1½-in. in Essex Court, 6½ ft. of 6-in. in Fayette St., 198 ft. of 6-in. in First St., 421 ft. of 6-in. in Fifth and Bent Sts., 455 ft. of 6-in. in Garfield St., 159½ ft. of 1¼-in. and 200 ft. of 4-in. in Grigg St., 386 ft. of 4-in. in Groveland St., 119 ft. of 1½-in. in Hampshire Court, 225 ft. of 4-in. in Harrison St., 222 ft. of 4-in. in Holworthy St., 552 ft. of 6-in. in Lancaster St., 943 ft. of 6-in. in Lexington Ave., 168 ft. of 4-in. in Locke St., 101 ft. of 1½-in. in Maynard Place, 7½ ft. of 6-in. and

3 ft. of 2-in. in Maple Ave., 105 ft. of 6-in. in Montgomery St., 241 ft. of 4-in. in Moore St., 41 ft. of 4-in. in Mt. Auburn St., 726 ft. of 8-in. and 46 ft. of 6-in. in Ninth St., (renewal), 141 ft. of 4-in. in Norfolk St., 3 ft. of 6-in. in Pearl St., 44 ft. of 6-in. and 159 ft. of 4-in. in Pioneer St., $6\frac{1}{2}$ ft. of 6-in. in Pleasant St., at corner of Chestnut, 74 ft. of $1\frac{1}{2}$-in. in Potter Court, $116\frac{1}{2}$ ft. of $1\frac{1}{4}$-in. in Court off Putnam Ave., 313 ft. of 4-in. in Railroad St., $40\frac{1}{2}$ ft. of 6-in. in Raymond St., 149 ft. of 4-in. in Reidesel Ave., $620\frac{1}{2}$ ft. of 8-in. and $31\frac{1}{2}$ ft. of 6-in. in Rogers St., 226 ft. of 4-in. in Rutland St., 86 ft. of 6-in. in Sixth St., 30 ft. of $1\frac{1}{4}$-in. in Squire's Court, $215\frac{1}{2}$ ft. of 4-in. in Surrey St., 202 ft. of 2-in. in Trowbridge Court, 159 ft. of 6-in. and 421 ft. of 4-in. in Washington Ave., $25\frac{1}{2}$ ft. of 6-in. in Washington St., and 45 ft. of $\frac{3}{4}$-in. pipe has been used for blow-offs.

On Pleasant St., from Putnam Ave. to Chestnut St., the 6-in. main has been taken up and an 8-in. pipe laid in its place. This change was made solely to accommodate the Dover Stamping Co., and all cost of the change was paid by them.

New Supplies.

360 new supplies have been laid making a total of 9091. 16 old supplies have been renewed and 43 furnished with sidewalk shut-offs. Two have been enlarged.

Leakage.

515 leaks have been stopped; namely:—one on 2-in. main, two on 3-in. main, three on 4-in. main, three on 6-in. main, one on 6-in. cement main, one 20-in. cement main, forty-nine on supplies in the streets, one at meter connection, and 454 on premises reported by inspectors and repaired by owners or occupants.

All of the fixtures on premises were inspected when the annual canvass was made and inspection of the main pipes and fixtures has been carried on during the Summer.

Drinking Fountains.

One new drinking fountain has been set, on Garden Street, near the Washington Elm, making the number at this date fifteen.

Stand Pipes for Street Watering.

No change has been made, the number remaining the same as last year; namely—40.

Gates.

All of the gates have been inspected and put in good condition.

Boxes.

22 hydrant boxes, 33 gate boxes, 5 cock boxes and 16 iron boxes have been set in place of decayed ones removed. I cheerfully recommend the iron box as superior in every way.

Hydrants.

Twenty new Chapman hydrants have been set during the year, and nine flush hydrants have been removed, making the total number now in use 612.

The flush hydrants removed were located as follows: Washington Ave., Washington and Main Sts., Ninth and Spring Sts., Ninth and Otis Sts., Pleasant and Chestnut Sts., Maple Ave. Fayette St., Antrim St., and Divinity Ave.

There are five flush hydrants on private premises *viz*:—two, on premises of New England Glass Co. on North St., two on premises of Boston & Lowell Railroad Co., on Prison Point St., and one on premises of C. L. Jones & Co. on Pearl St.

Five street reservoirs have been discontinued *viz*:—junction of Bow and Arrow Sts., Boylston St., corner of Eliot, Webster Ave., corner of Cambridge St., Norfolk St., midway between Hampshire St. and Broadway, and at North Ave., near Russell St. The number now in use is eight.

Brookline Street Pipe Bridge.

The sheathing has needed repairing it having been damaged by ice. I recommend that the west side be lined with two-inch plank from the bottom up three feet, as the present sheathing is not strong enough to resist the pressure of the ice at high tides. The siphon has been pumped out.

Pipe Yard.

A strip of land, 100 feet on Auburn St., and 100 feet deep, has been added to the yard. The dwelling house has been shingled and painted and slight interior repairs have been made.

The following tables show the locations of meters, fountains and stand pipes, the details of main and supply extention, and the account of stock on hand.

List of Meters in Use November 30, 1886.

Meters.	Locality.	Size.	Description.
Alghieri, Simon..... ,.....	Main st.....	¾	Worthington
Andrews, D..H.....).....	Sixth st..... ..	1	Worthington
American Steam Laundry.....	Osborn st	1	Crown
" Net & Twine Co.....	Third st.....	1½	Worthington
" Rubber Co.....	Potter st.....	4	Crown
" " "	Potter st.....	6	Gem
" Steam Safe Co.....	Main st.....	1	Worthington
Aquinas Hall.....	Harvard st.....	1	Worthington
Barbour, W. O..	Osborn st.....	1	Worthington
" " "	Osborn st.....	¾	Desper
Blake, I. W.....	Church st.....	1	Worthington
" " "	Palmer st.....	¾	Ball & Fitts
Bay State Brick Co.....	Spruce st.....	¾	Worthington
Barnes F. G. (Felton Hall).....	Cambridge st.....	1½	Worthington
Balcom, A. W.....	Austin st.....	¾	Union
Berry, Casper.....	Elm st..	1	Crown
Bird, H. M.....	Broadway	⅝	Union
Bullock, O. L.....	Broadway	¾	Worthington
Burton, A. & E.....	Harvard st.....	¾	Worthington
Boston Woven Hose Co.....	Hampshire st.....	4	Worthington
Boston Stamping Co.....	Third st.....	1½	Union
B. & L. R. R. (Repair shop).....	Bridge st.....	2	Worthington
" " " (Round-house).....	Prison Point st.....	2	Worthington
" " " (Round house).....	Prison Point st.....	2	Worthington
" " " (Paint shop).....	Prison Point st.....	1	Worthington
" " " (Car-house).....	Prison Point st.....	2	Worthington
" " " (Filling locom).....	Prison Point st.....	6	Union
Carr Bros.....	Lopez st.....	1	Worthington
Cambridgeport Diary Co .	Magazine st.....	1	Worthington
Cambridge Electric Light Co.....	Main st..... .	1½	Union
Cambridge Gas Light Co.....	Third st.....	1½	Crown
Cambridge Gas Light Co.....	Ash st.....	¾	Worthington
Cambridge Hospital.....	Mt. Aub urn st	1½	Crown
Campbell Bros.....	Main st.....	¾	Crown
Charles River R. R. Co.....	Hampshire st.....	¾	Worthington
" " "	Green st.....	¾	Worthington
" " "	Brookline st.....	1	Worthington
City of Cambridge (Shepard sch.)	North av.....	2	Worthington
" " (Ward 1 Bld.)	Brattle sq.....	1½	Worthington
" " (Ward 4 Bld.)	Central sq.....	1½	Worthington
" " (Upton sch.)..	Upton st.....	2	Worthington
" " (Cemetery)....	Coolidge av.....	4	Worthington
" " (Almshouse)..	Tannery st.....	2	Worthington
Cambridge R. R. Co. (Paint shop)	Dunster st.....	¾	Worthington
" " (Repair shop)	Dunster st.....	¾	Worthington
" " (Car-house)...	Dunster st.....	⅝	Desper
" " (Wood stable)	Dunster st.....	¾	Worthington
" " (Brick stable)	Dunster st.....	1	Worthington
" " (Office).....	Harvard sq.	¾	Crown
" " (Washing cars)	Murray st.....	1½	Crown
" " (Stable).....	Murray st.....	1½	Worthington
" " (Car-house)...	Cambridge and Baldwin	1	Desper
" " (Stable).....	Baldwin st	1	Worthington
" " (Brick stable)	Cambridge st.....	1	Worthington
" " (Stable).....	Cambridge st....	1	Worthington
" " (Stable).....	Cambridge st.....	1	Worthington
" " (Stable).....	Mt. Auburn st.....	2	Crown
" " (Stable).....	North av.....	2	Worthington
" " (Stable).....	Main st.....	2	Worthington
" " (Stable).....	River st.....	1	Worthington
Cambridge Y. M. C. A.....	Main st.....	2	Worthington
Cushman Bros.....	Main st.....	¾	Union
Close, George.....	Broadway	1	Worthington
Caswell & Coolidge.....	Franklin st.....	1	Worthington
Coleman, John & Son.....	Broadway.	1	Worthington
Clark, B. P. & Co.....	Main st.....	1½	Worthington
Cochrane & Co.....	Potter st.....	1	Crown
Childs & Co..	Main and Osborn sts.....	¾	Union
Cass, F..	Auburn st.....	4	Crown
Cofran, L. M.....	Concord av.....	2	Worthington
Coolidge, J. G. (Green house)....	Coolidge av.....	1	Worthington
" " " (Barn).....	Coolidge av.....	2	"
Davis, Curtis & Co.....	Broadway.	2	Worthington
Davis, J. C. & Co.....	Broadway.....	2	Crown

List of Meters (Continued).

Meters.	Locality.	Size.	Description.
Dugan & Rutherford	First st	1	Crown
Daniels Badger & Co	First st	¾	Union
Daniels Badger & Co	Albany st	2	Crown
Davenport, A. H	Cambridge st	2	Worthington
" " "	Otis st	¾	Crown
Dailey C. W	Cambridge st	1	Worthington
Derby, H	Main st	1	Crown
Dover Stamping Co	Putnam av	6	Union
Downing, Theo	Eustis Ct	1	Worthington
Draper, Francis & Co	Otis st	¾	"
Docker & Holton	Broadway	2	"
Dow, Davis & Co	Portland st	2	Crown
Day, Cordage & Co	Rogers st	2	"
Dee, T. W	Brattle st	1	"
De Rosay, L. E. & Sons	Dublin st	¾	Worthington
East Cambridge Club Stable	First st	1	"
Episcopal Seminary	Brattle st	1½	"
Furfey, James	Brookline st	¾	"
Fischer, F	Tannery st	2	Union
Gilmore & Eustis	Portland st	2	Worthington
Goepper Bros	Ninth st	1½	"
" "	Ninth and Spring sts	2	"
Greely, Leander	Broadway	1½	"
Griffin & Dolan	Decatur st	⅝	Crown
Harvard College (Holworthy Hall)	College grounds	¾	Worthington
" " (Boylston Hall)	" "	2	Crown
" " (Stoughton Hall)	" "	¾	Worthington
" " (Sever Hall)	" "	¾	Crown
" " (Thayer Hall)	Cambridge st	1½	Worthington
" " (In yard)	College grounds	1½	Worthington
" " (Memorial Hall)	Cambridge st	2	"
" " (Boat house)	De Wolfe st	¾	Desper
" " (Botanic Garden)	Garden st	1	Crown
" " (Gymnasium)	Cambridge st	1½	"
" " (Holyoke house)	Harvard st	2	Worthington
" " (Museum)	Divinity av	1	"
" " (Scientific school)	Kirkland st	¾	"
" " (Law school)	Holmes Place	1½	"
" " (Laboratory)	Holmes Place	1	"
" " (Jarvis field)	Everett st	¾	"
" " (Holmes field)	North av	2	Union
Hawley Machine Co	First st	1	Worthington
Hilton, J. M	Harvard st	1½	"
Hazlett & Underhill	First st	1½	"
Hews, A. H. & Co	Richdale av	1	"
Holt & Bugbee	East st	1½	Union
Hixon, Edward & Co	Main st	1	Ball and Fitts
Hovey & Co	Cambridge st	1	Worthington
Houghton, H. O. & Co	Blackstone st	6	Union
" " "	" "	⅝	Crown
" " "	" "	2	Worthington
Howe & Putney	Distillhouse st	1	"
Howland, W. B	Linden st	⅝	Crown
Hopkins, J. H. T	Prospect st	¾	Worthington
Ivers & Pond (Factory No. 1)	Main and Albany st	2	"
" " (Factory No. 2)	" " "	2	Crown
Instantaneous Photo. Co	Main st	1	"
Johnson & Doane	Green st	¾	Worthington
Jones, C. L. & Co	Pearl st	¾	"
Kemp, L. & Sons	Davis st	1	"
Kennedy, F. A. & Co	Green st	1½	"
" " "	Main st	¾	Crown
" " "	Franklin st	1½	Union
Kendall & Roberts (Engine room)	Main st	¾	Worthington
" " (Boiler shop)	" "	¾	"
" " (Foundry)	" "	¾	"
Low, J. W	Reed st	1½	"
Little, Brown & Co	Blackstone st	1	Ball and Fitts
Lamb & Ritchie	Albany st	1	Union
Latin school	Lee st	1	Worthington
Mason & Hamlin	Broadway	1½	Crown
Middlesex Bleachery	Sacramento st	1	Worthington
Middlesex Co. (Court house)	Otis st	¾	"
" " (Registry of Deeds)	Otis st	¾	"
" " (H of Correction)	Thorndike st	4	Union

List of Meters (Continued).

Meters.	Locality.	Size.	Description.
Middlesex Co. (Court house)	Thorndike st	¾	Union.
Millan, Alex	Brattle sq	¾	Crown
Moore, Chas	Farwell Pl	1	Worthington
Moering, Mrs. A. L. (Beck Hall	Main st	1	"
Murdock, W. H	Grigg st	⅝	Desper
Mt. Auburn (Greenhouse)	Brattle st	1	Worthington
" " (Cemetery)	Mt. Auburn st	⅝	Desper
Maverick Oil Co	Sixth st	2	Worthington
Miller & Shaw	Broadway	1	"
Morrill & Allen	Main st	¾	Crown
New England Glass Works	North st	2	Union
" " " "	North st	2	Worthington
North C. H. & Co	Columbia st	2	"
Norton, E. H	Winsor st	1	"
O'Brien, John F	Coolidge av	¾	"
Page, Geo G., Box Co	Hampshire st	2	"
Parry Bros. & Co	Raymond st	¾	"
Patterson, R. J	Cedar st	2	Union
Pray & Mayall	Third st	2	Crown
Porcellian Club	Harvard st	1	"
Porter's Hotel	North av	¾	Worthington
Phillips, Geo. L	Main st	¾	"
Ross, Mrs. H. P	Broadway	¾	"
Reardon, John & Sons	Waverley st	4	"
Revere Sugar Ref. (South side)	Water st	3	"
" " " (North side)	Water st	3	Union
Reversible Collar Co	Mt. Auburn st	1	Worthington
Rawson & Morrison	Main st	¾	"
Rougher, M	B. & L. R. R. Yard	2	Union
Rideout, M. E	State st	1	Worthington
Roberts, O. P	Brattle sq	1	"
Ross, A. M	Main st	¾	"
Rogers, Geo. M	Washington st	3	"
Russell, & Zerega	State st	¾	"
Schenk (Laundry)	Main st	¾	Crown
Sargent, Dr. D. A	Palmer st	1	Ball and Fitts
Sands, M. W	Walden st	1	Worthington
" " "	Dublin st	¾	Union
" " "	Dublin st	¾	"
Shorey, Geo. L	Kinnaird st	4	"
Smart, D. C	Main st	2	Worthington
Saurman, B. F	Gore st	¾	Desper
Sortwell, D.R. & Co	Distillhouse st	2	Worthington
St. Mary's Church	Norfolk st	2	"
" " (Gymnasium	Harvard and Prospect st	¾	"
" " (Orphan Asylum)	Cambridge and Elm	1	"
Speare, Gregory & Co	Rogers st	1½	"
Slavens J. W. L	Bridge st	1	Crown
Squire, J, P. & Co	Gore st	1	Worthington
" " " (Stable)	Gore st	2	"
" " "	Gore st	4	"
" " "	Gore st	6	Gem
Schaeffer Eletric Light Co	Main and Osborn sts	¾	Union
Sweetzer Bros	Otis st	¾	Worthington
Tower, Sylvester	Broadway	2	"
" "	Broadway	1	"
Thurston & Hall	Elm st	1	"
Tug, "Henry Chapel,"	First st	2	Crown
Teele, Frank H	Lincoln Ct	¾	Worthington
Thayer, Henry & Co	Broadway	2	"
Tracy, M. F,	Boylston st	1	Desper
Temple F. L	Kirkland st	2	Worthington
Union Pacific Tea Co	Main st	¾	Union
Uhrig, Joseph	Main st	1½	Worthington
Union Glass Co (Paeking room)	Webster av	⅝	Crown
" " " (Pot room)	Webster av	1	Worthington
Varnum, W. H	Putnam av	¾	"
Whitney, W. H	Main st	¾	Crown
Wilson, John & Son	Brattle st	1	Worthington
Woodbridge, S. F	Frank st	1	"
Waitt & Watts	Otis st	1	"
Wright & Scorgie	Mt. Auburn st	¾	Desper
Wilkins, Wm	Earl st	1	Crown
Woodbury, J. A	First st	2	Union

Accompanying this report is that of the Engineer at the Pumping Station, with a full account of the operations at the Engine-house.

Respectfully submitted,

HIRAM NEVONS.

Superintendent.

List of Drinking-Fountains, Nov. 30, 1886.

Bridge Street, junction of Cambridge Street.
Broadway, corner of Norfolk Street.
Brattle Square, east side at Brewer's Block.
Brattle Street, junction of Fresh Pond Lane.
Central Square, west side.
Central Square, east side.
Garden Street, at Washington Elm.
Hampshire Street, junction of Broadway.
Harvard Square, at the flag-staff.
Inman Square, east side.
Main Street, junction of Broadway.
Main Street, junction of Mt. Auburn Street.
North Avenue, corner Walden Street.
North Avenue, north side, west of Cameron Street.
Putnam Avenue, corner Brookline Street.

List of Stand-Pipes for Street Watering, Nov. 30, 1886.

Brattle Street, near University Press.
Brattle Street, corner Sparks Street.
Brattle Street, near Fayerweather Street.
Brattle Street, near Fresh Pond Lane.
Bridge Street, junction of Cambridge Street.
Broadway, near Third Street.
Broadway, corner Sixth Street.
Broadway, corner Windsor Street.
Broadway, junction of Hampshire Street.
Brookline Street, corner of Putnam Avenue.
Cambridge Street, near Warren Street.
Cambridge Street, near Windsor Street.
Cambridge Street, at Inman Square.
Columbia Street, near Austin Street.
Concord Avenue, near Wyeth Street.
Dana Street, corner of Chatham Street.
Gore Street, west of Third Street.
Green Street, near Western Avenue.
Garden Street, near Chauncey Street.
Harvard Street, corner of Prescott Street.
Inman Street, near Broadway.

Kirkland Street, near Quincy Street.
Main Street, near Portland Street.
Main Street, near Hancock Street.
Magazine Street, opposite Warland Street.
Mt. Auburn street, near Athens Street.
North Avenue, near Common.
North Avenue, corner Sacramento Street.
North Avenue, near Roseland Street.
North Avenue, near Beech Street.
North Avenue, near Spruce Street.
North Avenue, corner Norris Street.
North Avenue, opposite Tannery Street.
Prison Point Street, opposite Round-house.
River Street, near Putnam Avenue.
Sixth Street, near Thorndike Street.
Spruce Street, corner Cedar Street.
Third Street, near Rogers Street.
Thorndike Street, near Third Street.
Western Avenue, corner Howard Street.

Main Pipe Laid, Number of Gates and Fire Hydrants.

Locations.	Iron Pipe.		Gates.		Hydrants.	
	Length.	Size.	No.	Size.	No.	Size.
	Feet.	Inch.		Inch.		Inch.
Agassiz street	401	4	2	4	....	....
Antrim street	6½	6	....	....	1	6
Athens court	47	2	1	2	....	....
Auburn street	160	4	....	....	....	....
Bates street	7	6	....	...	1	6
Bates street	396	4	2	4	....	....
Bath street	40	4	....	....	....	....
Bay street	243½	4	1	4	....	....
Bay street	..	..	1	6	....	....
Bellevue avenue	498	4	1	4	....	....
Bellevue avenue	13	6	....	....	1	6
Blake street	275	6	....	....	....	....
Blackstone street	877½	6	1	6	....	....
Blackstone street	45	¾	1	4	....	....
Brewery street	118	4	1	4	....	....
Brookline and Auburn	2	4	1	4	....	....
Blanche street	24	4	....	....	....	....
Concord avenue	251	1½	1	1½	....	....
Crescent avenue	150	6	....	....	....	....
Divinity avenue	4	6	....	....	....	....
Donnell avenue	76	4	....	....	1	6
Essex court	125	1½	1	1½	....	....
Fayette street	6½	6	....	....	1	6
First street	198	6	....	....	1	6
Fifth and Bent streets	421	6	1	6	1	6
Garfield street	455	6	....	....	1	6
Grigg street	159½	1¼	....	....	....	....
Grigg street	200	4	1	4	....	....
Groveland street	386	4	1	4	....	....
Hampshire court	119	1½	1	1½	....	....
Harrison street	225	4	2	4	....	....
Holworthy street	222	4	1	4	....	....
Lancaster street	552	6	1	6	1	6
Lexington avenue	943	6	1	6	1	6
Locke street	168	4	....	....	....	....
Maynard place	101	1½	....	....	....	....
Maple avenue	7½	6	....	....	1	6
Maple avenue	3	2	1	2	....	....
Montgomery street	105	6	....	....	....	....
Moore street	241	4	2	4	....	....
Moore street	..	..	1	6	....	....
Mt. Auburn street	41	4	....	....	....	....
Ninth street	726	8	1	8	....	....
Ninth street	46	6	1	6	3	6
Norfolk street	141	4	1	4	....	....
Pearl street	3	6	1	6	....	....
Pearl street	..	..	1	4	....	....
Pioneer street	44	6	1	6	....	....
Pioneer street	159	4	....	....	....	....
Pleasant cor. Chestnut street	6½	6	....	....	1	6
Potter court	74	1½	1	1½	....	....
Putnam avenue, off Court	116½	1¼	1	1¼	....	....
Railroad street	313	4	....	....	....	....
Raymond street	40½	6	....	....	....	....
Reidesel avenue	149	4	....	....	....	....
Remington street	..	..	1	3	....	....
Rogers and Fifth strects	31½	6	1	6	1	6
Rogers and Fifth streets	620½	8	1	8	....	....
Rogers and Third streets	..	..	....	....	1	6
Rutland street	226	4	1	4	....	....
Sixth street	86	6	....	....	....	....
Squire's court	30	1¼	....	....	....	....
Surrey street	215½	4	1	4	....	....
Trowbridge court	202	2	1	2	....	....
Washington avenue	165½	6	1	6	2	6
Washington avenue	421	4	1	4	....	....
Washington street	19	6	....	....	1	6

Recapitulation.

	8 Inch.	6 Inch.	4 Inch.	3 Inch.	2 Inch.	1½ Inch.	1¼ Inch.	¾ Inch.	Total.
Length in feet of iron pipe..	1,346½	4,463	5,066	....	252	715	306	45	12,193½
Number of gates.....	2	11	21	1	3	4	1	....	43
Number of hydrants.....	....	20	....	....	....	....	....	....	20

New Supplies.

GALVANIZED PIPE AND BRASS FITTINGS USED FROM DEC. 1, 1885, TO DEC. 1, 1886.

	8 Inch.	6 Inch.	4 Inch.	3 Inch.	2 Inch.	1½ Inch.	1¼ Inch.	1 Inch.	¾ Inch.	Total.
Length in feet of pipe laid.....	341	590	422½	7	1,728	405	628	1,169	10,777	16,067½
Number of supplies.....	1	3	6	..	12	4	15	28	291	360
No. of stop and wastes..	..	..	..	..	10	4	15	29	289	347
Number of screw cocks.	..	..	..	..	8	4	14	29	287	342
No. of sidewalk cocks...	..	..	..	..	..	1	1	29	289	320
Number of stand pipes..	..	..	..	..	..	1	2	29	285	317
Number of boxes, frames and covers.....	..	..	..	..	..	..	..	..	..	45

List of Check-Valves.

OLD HIGH-SERVICE.

	Size in inches.
Lake View Avenue, 150 feet north from Huron Street.....	10
Lake View Avenue, 150 feet north from Brattle Street.....	6
Fayerweather and Reservoir Streets.....	6
Concord avenue, 135 feet south from Buckingham street.....	6
Buckingham street, 220 feet west from Concord avenue.....	6
Garden and Linnæan streets.....	6
Raymond and Linnæan streets.....	6
Avon Hill and Linnæan streets.....	6
Arlington street, 230 feet west of North avenue.....	6
Mt. Vernon street, 100 feet west from North avenue.....	6
Mt. Pleasant street, 150 feet south from Walden street.....	6

List of Check-Valves. — Continued.

New High-Service.

	Size in inches.
Highland street, on old 12-inch supply main	12
Dana street and Broadway	4
Harvard street, near Hancock	6
Centre street, near Hancock	4
Dana street, near Main	4
Harvard and Ellery streets, two valves	6
Harvard and Trowbridge streets, two valves	4
Harvard and Ware streets	4
Harvard and Prescott streets	4
Quincy street, near Broadway	4
Broadway, on line of 6-inch pipe crossing College Grounds	6
Waterhouse street, near small common	6
Kirkland and Cambridge streets	10
Berkeley street, near Craigie	4
Appian Way, near Brattle street	4
Linnæan and Lancaster streets (old high-service extension)	6
Kirkland street and Frisbie place	4

Statement of Stock on Hand Dec. 1, 1886.

For Street Mains (Iron Pipe and Fittings).

	48 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.
Straight pipes, 12 ft. each	2	..	..	10	14	1	20	12	30	140	..
Bends	..	3	1	..	2	1	9	8	7	3	1
Y Branches	..	..	1	1–12	..	1	..	..	..	..	..
Sleeves	..	1	2	7	2	3	6	6	13	3	3
Clamp sleeves	..	..	4	4	3	4	6	8	4	5	5
Drain offsets	..	..	..	..	..	..	..	...	8	..	..
Offsets	..	..	..	..	..	..	6	4	11	13	..
Gates	..	..	..	..	..	..	..	1	3	4	2
Check-valves	..	..	..	..	..	..	1	..	..	..	..
Blow-off branches	..	..	3–6	2–6	..	..	..	..	..	..	..
Caps	..	..	..	...	2	..	..	2	5	6	..
Clamps for cement pipe	..	..	..	2	..	..	..	..	..	..	..
T's	..	1–6	1–24	1–20	1–6	3–8	3–8	..	5–6	5–4	2–3
"	..	..	4–6	1-16	...	1–6	12–6	..	3–4	..	..
"	..	..	..	1–12	..	..	..	..	..	..	..
"	..	..	..	1–10	..	..	..	..	..	..	..
"	..	..	..	2–6	..	..	..	..	..	..	..
Crosses	..	..	..	1–20	1–12	5–10	2–10	..	6–6	16–4	1–3
"	..	..	..	2–10	2–6	7–4	6–8	1–4	9–4	..	..
"	..	..	..	..	..	7–6	5–6	..	..	..	..
"	..	..	..	..	..	..	1–4	..	..	..	..
Reducers	..	..	1–10	1–12	1–8	..	1–8	..	5–4	..	2–4
"	..	..	..	1–10	1–6	..	2–6	..	..	..	..
"	..	..	..	1–8	..	..	..	..	..	..	..

FOR SUPPLIES (GALVANIZED PIPE AND BRASS FITTINGS).

	2-in.	1½-in.	1¼-in.	1-in.	¾-in.
Feet in length of galvanized pipe	30	165	16	200	1,600
Elbows	30	34	8	60	60
Street elbows	40	..	30	5	29
Couplings	45	48	20	36	32
Unions	27	38	41	60	36
Faucets	..	..	..	13	20
Stop and waste	11	25	11	17	140
Screw-cocks	4	23	7	1	105
Sidewalk cocks	..	..	..	23	198
Screw-cocks for cement pipe	..	..	..	30	..
Blow-off cocks	..	11	..	44	24
Air-chamber	..	..	..	..	..
Socket end of rod, 7	..	..	..	..	..
Nipples	16	30	30	50	50
Plugs, different sizes, 80	..	..	..	..	..
Bushings, from 2-in. to ½-in., 225	..	..	..	..	..
Fountain cocks	..	..	..	..	7
Sill cocks	..	..	..	..	12
Hose nipples	..	..	..	..	20
T's	30	27	70	20	96
Lot of cast-iron T's and crosses	..	..	..	..	..
Caps	14	12	12	12	12
Reducing couplings from 2-in. to ½-in, 50	..	..	..	..	..
Stand pipes, 172	..	..	..	..	..
Clips, 49	..	..	..	..	..
Lead connections, from 1¼-in to ¾-in., 8	..	..	..	..	..
Hydrant cocks	..	..	..	..	12
Check valves	1	1	1	1	1
Cement cocks	..	..	..	31	..

Stock in Shop and Yard.

3 hydrant-valves.
9 bolts for flush-hydrants.
25 stop and wastes for flush-hydrants.
4 lead kettles.
3 furnaces.
4 ladles.
3 bench vises.
4 drinking-fountains.
8 bands for capping main pump.
1 meter-box.
1 iron gate box.
2 hydrant-boxes.
1 gate box (wooden).
7 small gate boxes.
3 cock boxes.
20 large frames and covers.
200 risers for boxes.
160 seals.
1 breast drill.
1 ratchet for tapping main pipe.
3 machines for tapping cement pipe.
1 washer cutter.
1 platform scales.
3 grindstones.
1 diaphragm pipe.
1 hand pump.
8 thawing pumps.
200 feet thawing-out pipe.
1 barrel clay.
1 small hatchet.
4 hoes.
1 hay cutter.
3 small derricks.
1 breast derrick.
11 pipe wrenches.
2 nut wrenches.
6 monkey wrenches

24 nuts.
5 axes.
4 sledge hammers.
lot of old junk.
6 gallons oil.
1 pair long leg boots.
1 cord wood.
25 feet ¾-inch hose.
1 cask cement.
100 feet 2-inch hose.
6 screw-drivers.
3 saws.
1 floating hook.
1 large mall.
1 square.
Plane, compasses, etc., for carpentering.
A lot of counters and ratchet movements for meters.
A lot of lumber.
11 spindles for 4-inch and 6-inch gates.
5 horses.
6 wagons.
6 harnesses.
2 sleighs.
2 double-runner sleds.
8 blankets.
2 buffalo robes.
2 lap robes.
3 oil-coverings for horses.
1 lathe, with the usual chucks and tools.
1 water-motor.
1 threading machine, with dies complete.
1 drilling machine, with drills complete.
3 tapping machines for supplies, with taps and drills.
4 hooks for tapping main pipe.
2 2-inch taps and drills.
8 pipe cutters.
7 pipe tongs.
4 sets main pipe tools.
13 gate wrenches.
4 blow-off wrenches.
1 2-inch cock wrench.
400 block stones.
4 wooden horses.
10 oil cans.
8 die-plates, with dies complete.
4 tool chests.
2 hand carts.
3 chains.
95 shovels.
3 snow shovels.
30 picks.
14 trench rammers.
2 paving rammers.
8 pails.
4 iron bars.
20 wheelbarrows.
2 tamping bars.
1,400 pounds lead.
70 pounds packing.
4 hydrant bodies.
1 set hydrant tools.
3 rakes.
Lot old flush hydrants.
9 post hydrants.
19 post-hydrant rods.
5 hammers.
1 plough.
1 dray.
35 wooden plugs of different sizes.
Lot of blocks and wedges.
7 ¾-inch Worthington meters.
6 1-inch Worthington meters.
1 3-inch Worthington meter.
4 ¾-inch Union Rotary meters.
1 1-inch Union Rotary meter.
1 1-inch Ball and Fitts meter.
1 ⅝-inch Crown meter.

REPORT

OF THE

ENGINEER OF THE PUMPING STATION.

PUMPING STATION,
CAMBRIDGE WATER WORKS,
December 1, 1886.

Hiram Nevons, Esq., Superintendent:—

SIR:—During the past year the old boilers, which had been in operation since 1868, have been taken out and four new steel boilers put in place of them. The new boilers are made of "Otis steel," having a tensile strength of 60,000 pounds per square inch, an elastic limit of 37,000 pounds and an elongation of at least 20 per cent. in ten inches. A test piece from each plate was tested at the Otis Co.'s works, and the results forwarded with the plates. The boilers were built by William Campbell & Sons, of this city, and are a first-class job. We have now boiler capacity sufficient for running the three engines at the same time, and also have a reserve for cleaning or repairs.

The engines have not required any extensive repairs during the year, and are in good condition.

The auxiliary pumps at the pond, which were in operation at the date of last report, continued running until January 30, and were started again on October 24. Following will be found a statement of the expenses at the pumping station, with the usual tables:—

EDWIN C. BROOKS,
Engineer.

STATEMENT.

$524\frac{1440}{2240}$ tons Cumberland coal at $4.13	$2,166 76
$359\frac{840}{2240}$ tons Cumberland coal, at $4.18	1,502 19
New boilers	2,408 17
Oil, Waste, packing, etc.	176 31
Repairs on engines	34 90
Repairs on buildings and care of grounds	432 27
Gas	101 48
Salaries	3,915 00
Total	$10,737 08

Engine Record, Pond Levels and Rainfall.

Date.	Low-Service Engines.						High-Service Engine.						Total water pumped.	Daily average water pumped.	Total coal consumed.	Daily average coal consumed.	Av'age height of Pond.	Rainfall.
	Total pumping time.		Daily average pumping time.		Total water pumped.	Daily average water pumped.	Total pumping time.		Daily average pumping time.		Total water pumped.	Daily average water pumped.						
	Hrs.	Min.	Hrs.	Min.	Gallons.	Gallons	Hrs.	Min.	Hrs.	Min.	Gallons	Gallons.	Gallons.	Gallons.	Lbs.	Lbs.	Feet.	Inches
December, 1885..	369	25	11	55	79,634,700	2,568,861	369	25	11	55	6,572,698	212,023	86,207,398	2,780,884	146,800	4,736	6.72	1.82
January, 1886....	447	50	14	27	96,280,200	3,105,813	447	50	14	27	8,083,910	260,771	104,364,110	3,366,584	177,900	5,739	7.18	6.41
February, 1886. .	444	40	15	53	97,287,300	3,474,546	444	40	15	53	7,755,072	276,969	105,042,372	3,751,513	174,400	6,229	10 56	7.35
March, 1886.....	432	55	13	58	98,046,000	3,162,774	432	55	13	58	7,646,342	246,656	105,692,342	3,409,430	171,600	5,535	13.02	3.49
April, 1886.....	368	25	12	17	86,118,300	2,870,610	368	25	12	17	6,865,901	228,863	92,984,201	3,099,473	146,600	4,887	13.64	2.43
May, 1886.....	401	15	12	57	95,597,100	3,083,777	401	15	12	57	7,782,758	251,057	103,379,858	3,334,858	157,200	5,071	13.30	3.92
June, 1886.....	422	35	14	05	99,709,200	3,323,640	422	35	14	05	8,389,382	279,646	108,098,582	3,603,286	168,800	5,627	12.54	1.48
July, 1886.....	475	10	15	20	109,037,700	3,517,340	475	10	15	20	10,232,064	330,067	119,269,764	3,847,412	188,300	6,074	11.40	3.54
August, 1886.....	445	40	14	23	100,981,800	3,257,477	445	40	14	23	8,542,944	275,579	109,524,744	3,533,056	177,000	5,710	10.45	3.20
September, 1886.	417	00	13	54	95,278,800	6,175,960	417	00	13	54	7,994,342	266,478	103,273,142	3,442,438	165,500	5,517	9.26	4.64
October, 1886....	408	45	13	11	95,716,200	3,087,619	408	45	13	11	7,883,578	254,309	103,599,778	3,341,928	160,500	5,177	7.98	3.62
November, 1886..	373	30	12	27	86,940,000	2,898,000	373	30	12	27	7,182,586	239,419	94,122,586	3,137,419	145,600	4,853	7.23	4.22
Total	5,007	10			1,140,627,300		5,007	10			94,931,578		1,235,558,878		1,980,200			46.12
Daily Average...	13	43			3,125,006		13	43			260,087		3,385,093		5,425		10.27	

Stock on Hand December 1, 1886.

489 tons Cumberland coal, 40 gallons cylinder oil, 19 gallons engine oil, 42 gallons kerosene oil, 30 lbs. tallow, 50 lbs. cotton waste, 25 lbs. rubber packing, 5 lbs. Usidurian packing, 3 lbs. Asbestos packing, 10 lbs. Empire packing, 10 lbs. Winans packing, 18 manhole gaskets, 24 9-in. rubber valves, 2 valve seats, 2 steam gauges, 65 lbs. soap, 100 fire brick, 2 brooms, 15 ft. 5-inch rubber belting, $\frac{1}{2}$ doz. files, 1 lb. emery, 2 bbls. brimstone, 300 lbs. bolts and nuts, 1 pair plungers and rings for No. 2 Engine, 1 lot iron pipe, 1 lot pipe fittings, 10 feet 24-inch flange pipe, 8 ft. 9-inch flange pipe, 8 ft. 6-inch flange pipe.

Tools, Furniture and Instruments.

1 18-inch x 10 ft. engine lathe, with chucks, tools, etc.; 1 3-inch x 9-inch engine, 1 lot shafting, belting and pulleys; 1 grindstone, 2 vises, 1 vise bench, 3 die-plates and dies, 1 set pipe taps, 1 set hand taps, 2 pipe cutters, 14 pairs pipe tongs, 3 hand hammers, 1 copper hammer, 18 cold chisels, 6 files, 1 hand bellows, 6 screw wrenches, 4 Stillson wrenches, 22 fork wrenches, 26 socket wrenches, 3 gate wrenches, 1 hydrant wrench, 2 clamp screws, 1 sledge, 2 ratchets, 24 drills, 1 breast drill, 2 jackscrews, 6 steel bars, 2 soldering irons, 4 cylinder head cranes, 12 eye-bolts, 75 starting bolts, 1 chain fall, 3 tackles, 2 ladles, 4 wooden horses, 1 oil cabinet, 1 set measures, 1 lot oil cans, 1 oil pump, 1 carpenter's bench,4 planes, 3 hand saws,8 chisels, 7 gauges,2 screw-drivers, 2 bit-stocks, 13 bits, 3 augers, 1 draw-knife, 1 spokeshave, 1 axe, 3 hatchets, 1 square, 1 set fire tools, 1 coal car, 1 pair platform scales, 2 wheelbarrows, 12 scoop shovels, 1 tube brush, 1 forge, 1 anvil, 5 pairs tongs, 2 handchisels, 1 lawn mower, 2 steel rakes, 2 wooden rakes, 2 scythes, 4 forks, 1 weeder, 1 spade, 1 pick, 1 cast-iron roller, 6 ladders, 3 step ladders, 200 ft. 2-inch hose and pipe, 100 ft. $\frac{3}{4}$-inch hose and pipe, 1 water cooler, 6 fire pails, 8 water pails, 1 watering pot, 1 window brush, 1 floor brush, 1 dust-brush, 1 feather duster, 1 dust-pan, 1 lot cocoa matting, 5 mats, 6 spittoons, 1 lot gas fixtures, 4 bracket lamps, 6 lanterns, 4 hand lamps, 1 desk, 2 tables, 2 clocks, 6 chairs, 1 barometer, 1 hygrophant, 1 thermometer, 2 rain gauges, 1 snow gauge.

Tools, Furniture, etc., at Engine House at Pond.

1 12 x 20-inch portable engine and boiler, 1 12 x 20-inch stationary engine, 1 40 H. P. locomotive boiler, 1 No. $2\frac{1}{2}$ Blake pump, 1 12-inch centrifugal pump, 2 12-inch Follansbee propeller pumps, 1 Hancock inspirator, 1 lot shafting, pulleys and belting, 1 hand force pump, 100 ft. 1-inch fire-hose and pipe, 80 ft. 1-inch rubber-hose, 10 ft. $\frac{3}{4}$-inch steam-hose, 1 set fire tools, 2 oil cans, 2 squirt cans, 1 dip-net, 1 belt awl, 1 belt punch, 1 lot belt lacings, 2 bracket lamps, 2 lanterns, 1 large lantern, 2 chairs, 1 stove and pipe, 1 cot bed and bedding.

ANNUAL REPORT

OF THE

CHIEF ENGINEER OF THE FIRE DEPARTMENT.

CHIEF ENGINEER'S OFFICE, CITY HALL,
CAMBRIDGE, MASS., Nov. 30, 1886.

To His Honor the Mayor and the City Council: —

GENTLEMEN: — In compliance with the provisions of the City Ordinance, I herewith present my eighth annual report, showing the condition of the department, the receipts and expenditures, a record of fires and alarms, with their causes, the losses and insurance, a list of those composing the force, and such other information as may be of general interest.

Membership.

The total membership of the Department consists of ninety-eight (98) men — twenty-four (24) are permanently employed and seventy-four (74) are call men.

All the members of the department, with but few exceptions, have answered the large number of calls made upon them the past year, with promptness, and performed the work required of them in an efficient manner.

During the year two cases of breach of discipline have occurred, rendering it necessary for judgment on the part of the Board of Engineers.

Two deaths have occurred since my last report: Timothy Ryan, ladderman of Hook and Ladder Company No. 2, died after a short illness December 5, 1885; and Charles E. Snow, for several years a hoseman of Engine Company No. 2, died June 11, 1886.

Apparatus.

The apparatus consists of five steam fire engines, one chemical engine, four hose carriages, one hose wagon and two hook and

ladder trucks in active service, fully equipped and in good condition. In reserve, one steam fire engine, fully equipped and in serviceable condition, and one hose carriage in ordinary condition. The hose wagon, contracted for by the Committee on Fire Department of last year, was delivered, accepted and placed in service at Engine House No. 3, on the 24th day of March, 1886.

During the year two hose pungs have been purchased. One was placed in service at Engine House No. 4, and the other at Engine House No. 5. Extensive repairs have also been made on the following apparatus: Steamer No. 4 was furnished with a complete new boiler, painted and other necessary repairs made. The chemical engine was also thoroughly repaired and painted, which makes these two engines quite as good as new. Much needed repairs were also made on fuel-wagons Nos. 1, 3 and 4.

In my opinion another engine ought to be purchased and located on the south side of Main street and west of Pearl street, the steamer now located the nearest to the large manufactories, in the lower section of that part of the city, being nearly a mile away. In nearly every case of an alarm of fire in Wards 1 and 3, steamers 2 and 5 and the chemical engine answer it, thereby leaving the greater part of Wards 2 and 4 unprotected during their absence.

The addition of another engine, located in that section, would not only be a protection to Ward 4, but in my opinion a great protection to all parts of the city, as at no time, except in cases of large fires, would it be necessary to leave any large portion of a district uncovered.

I would therefore recommend that this matter be considered by your Honorable Boards.

Hose.

The amount of serviceable hose now in charge of the several companies is 10,500 feet. During the year 600 feet has been condemned and 300 feet purchased.

The coming year it will be necessary to procure a quantity of hose to take the place of that which has been in the service a number of years, and is constantly giving out.

Horses.

The number of horses in the service of the department at the

present time is 24, and with few exceptions are well suited for the work required of them. Two horses have been purchased during the year and one sold.

Fire Alarm Telegraph.

During the year the fire alarm has been improved in many respects, and the greatest care has been taken to detect anything which might impair the usefulness of this branch of the service. The lines in many places have been removed from house tops and placed on poles, thereby rendering them more accessible in case of breakage or disarrangement. Old wire and poles, which had become decayed from long service, were also replaced with new material.

A bell and bell-striker have been purchased, to be placed in the tower, which has been built in the yard of the Corlett school house, on Holworthy street; also two street signal boxes, numbered 10 and 134, and located as follows: The former on Thorndike, near First street; the latter on the city stable, corner of Tremont and Hampshire streets.

There are 70 street signal boxes, 9 engine house gongs, 9 engineer and police gongs, 6 tappers, 1 10-circuit automatic repeater, 6 galvanometers, 1 switch board, 10 lightning arresters, 8 bell-strikers, 4 bells, 445 battery jars, 270 poles, and about 86 miles of line wire; also a quantity of supplies on hand, and the necessary tools for the care and repair of the fire alarm.

Houses.

The several stations occupied by this department are generally in good condition, with the exception of that occupied by Hook and Ladder No. 2.

By the authority of the Committee on Fire Department, the two rooms, with furniture, in the Brattle Square building, and formerly used by the companies attached to Engine No. 1 and Hook and Ladder No. 1, as meeting rooms, have been abandoned and turned over to the Committee on Public Property.

Hydrants.

In accordance with recommendations from this department 11 hydrants have been added during the year, making the total number now in service for fire purposes 621.

Appropriations, Receipts and Expenditures.

The appropriation for this department made at the beginning of the fiscal year, including estimated revenue of $200, was $59,500; the total expenditures for the year ending November 30 were $58,375.98, leaving an unexpended balance of $1,124.02. The revenue in excess of the estimate was $54.15.

Fires and Alarms.

The accompanying statement will show that the whole number of fires and alarms from all causes was 137, with a loss of property amounting to $147,086, which, by a comparison with the previous year, shows an increase of 15 alarms and an increased loss of property to the amount of $52,669.

The losses, as near as could be ascertained, were covered by insurance to the amount of $289,025. The amount of insurance paid on losses was $95,348.

Four alarms were given for fires out of the city, at three of which a portion of the department rendered assistance.

Appointments, Transfers and Discharges.

Engine Company No. 4. — Nicholas J. Penney was appointed hoseman Dec. 16; John H. Griffin, hoseman, was discharged for neglect of duty Jan. 6, and Jeremiah O'Connor was appointed to fill the vacancy Jan. 19.

Hook and Ladder Company No. 1. — Warren H. Dow, ladderman, was transferred to Engine Company No. 2 as hoseman June 15 to fill the vacancy caused by the death of Charles E. Snow. John T. McNamee was appointed ladderman June 30. Joseph B. Farmer was transferred to Hook and Ladder Company No. 2 Sept. 29, and James W. Irwin was appointed to fill the vacancy Oct. 14.

Hook and Ladder Company No. 2. — Thomas F. O'Connell was appointed ladderman Dec. 30 to fill the vacancy caused by the death of Timothy Ryan. Jeremiah R. Hobbs, driver of truck, was discharged for intoxication and neglect of duty July 7, and Thomas Mimnaugh was appointed to fill the vacancy Sept. 29.

Accidents.

Although the Department has had a large number of calls the past year, I am pleased to report that no accident of a serious nature has befallen any of its members.

William Parks, of Hook and Ladder Company No. 1, and Orvill W. Van Duzee, of Hook and Ladder No. 2, were severely cut on their hands by window glass while on duty February 7.

George E. Muzzey, of Engine Company No. 4, received a severe sprain of his ankle while on duty at a fire August 4.

Warren H. Dow, of Engine Company No. 2, received painful injury to his hand while on duty August 9.

William J. Hanna, of Engine Co. No. 4, was severely burned on face and hand while extinguishing a fire Nov. 12.

James H. Furfey, of Hook and Ladder Co. No. 1, had his hand severely cut by glass while extinguishing a fire Nov. 29.

Increase of Salaries.

Upon petition of the call-men of the department, asking for additional compensation, the City Council adopted an ordinance, to take effect from the first day of January, 1887, fixing the rates of compensation per year, as follows: Assistant Engineer, $375, an increase of $50; Foremen of Companies, $220, an increase of $26; Assistant Foremen of Companies, $210, an increase of $27; hoseman and laddermen, $200, an increase of $28, making the total increase of compensation $2,117.

Acknowledgments.

In closing this report I desire to return my thanks to His Honor the Mayor, the City Council, and the Committee on Fire Department for the cordial support of such measures for the good of the department as have been recommended.

To the Board of Engineers and the officers and members of the several companies I express my earnest thanks for the prompt and efficient manner in which they have performed their duty whenever called upon the past year.

Respectfully submitted,

THOMAS J. CASEY,
Chief Engineer.

APPENDIX.

Joint Standing Committee on Fire Department.

ALDERMEN	Cogan and Henderson.
COUNCILMEN	Coolidge, Coveney and Stearns.

Board of Engineers.

Name.	Residence.	Rank.	Age.
Thomas J. Casey	173 Cambridge street	Chief Engin'r	53
Nathaniel W. Bunker . . .	6 Beach street . .	1st Assistant.	43
Charles W. Brackett . . .	133 Mt. Auburn st.	2d Assistant.	50
William B. Cade	27 Park street . .	3d Assistant.	52
Nathaniel W. Bunker . . .		Sec. of Board	

Engine Company No. 1.

House, Brattle Square.

Name.	Rank.	Age.	No. of Badge.
William H. Emery	Foreman	53	23
John H. Brown	Assistant Foreman .	35	24
Edwin E. Priest	Engineer	49	1
James Jefferson	Fireman	33	25
Hiram W. Hooker	Driver of engine . .	48	2
Charles R. Hooker	Driver of hose-carriage	42	3
John L. Jones, Jr.	Hoseman	35	26
Daniel E. Shea	"	30	28
William A. Carlin	"	35	29
James McLean	"	26	30
Robert L. Williams	"	37	31
John S. McLean	"	27	27

Engine Company No. 2.

House, Main Street near Winsor.

Name.	Rank.	Age.	No. of Badge.
James Cunningham	Foreman	44	32
Arthur C. Day	Assistant Foreman	49	33
Thomas Wiseman	Engineer	42	4
Smith A. Mowry	Fireman	23	34
John H. Walker	Driver of engine	57	5
Albert F. Sawyer	Driver of hose-carriage	43	6
Benjamin D. Foss	Hoseman	50	35
John McCarthy	"	36	36
John Haley	"	32	37
Charles H. Chapman	"	33	38
John G. Hicks	"	39	40
Warren H. Dow	"	36	39

Engine Company No. 3.

House, Fourth Street, near Cambridge.

Name.	Rank.	Age.	No. of Badge.
William F. Newman	Foreman	40	43
Edwin Winward	Assistant Foreman	42	44
Hiram Blood	Engineer	54	7
Elliot E. Alley	Fireman	50	45
Peter F. McSorley	Driver of engine	27	8
Lorenzo H. Dale	Driver of hose-carriage	44	9
Walter Baker	Hoseman	32	42
Timothy J. Mahoney	"	38	46
William H. Murray	"	35	48
Louis J. Stranger	"	32	47
John S. Dooris	"	41	49
William H. Cairns	"	23	41

Engine Company No. 4.

House, North Avenue, near Russell Street.

Name.	Rank.	Age.	No. of Badge.
Edgar H. Locke	Foreman	39	53
William J. Hanna	Assistant Foreman	40	52
John E. Ricker	Engineer	42	10
Benjamin Young	Fireman	42	57
George E. Muzzey	Driver of engine	44	11
Sylvanus G. Griffin	Driver of hose-carriage	39	12
Arthur C. Griffin	Hoseman	36	58
Josiah P. Parsons	"	38	56
Edward A. Hurd	"	36	51
George F. Tibbetts	"	46	50
Nicholas J. Penney	"	28	54
Jeremiah O'Connor	"	28	55

Engine Company No. 5.

House, Inman Square.

Name.	Rank.	Age.	No. of Badge.
Francis P. Scanlan	Foreman	40	59
Conrad D. Kinnear	Assistant Foreman	47	60
Charles E. Connor	Engineer	36	13
George W. McIntire	Fireman	31	61
Joseph P. Cartwright	Driver of engine	50	14
Francis P. Carr	Driver of hose-carriage	42	15
John Fitzgerald	Hoseman	39	62
Frank C. Mullett	"	34	63
William T. King	"	30	64
Hugh T. Barker	"	35	66
James F. Glynn	"	36	65
George P. Bannister	"	26	67

Chemical Engine Company No. 1.

House, Western Avenue.

Name.	Rank.	Age.	No. of Badge.
Lewis C. Clark	Engineman	42	17
William H. Foss	Driver	47	18

Relief Engineer.

Name.	Rank.	Age.	No. of Badge.
William H. Lydston	Engineer	39	16

Hook and Ladder Company No. 1.

House, Brattle Square.

Name.	Rank.	Age.	No. of Badge.
Charles Emerson	Foreman	41	69
John T. Mahaffy	Assistant Foreman	41	72
Albert S. Benson	Driver	42	19
James P. Ewell	Ladderman	50	75
Charles H. Waite	"	40	73
William Parks	"	42	77
Charles A. Sharon	"	37	76
William R. Mitchell	"	34	78
John A. Bartlett	"	53	79
John A. McDermott	"	36	80
James H. Furfey	"	29	68
Thomas H. McCoy	"	35	70
John T. McNamee	"	31	71
James W. Irwin	"	32	74

Hook and Ladder Company No. 2.

House, Cambridge Street, corner Portland.

Name.	Rank.	Age.	No. of Badge.
Thomas L. Hunter	Foreman	46	93
James F. Dalton	Assistant Foreman	49	81
Thomas Mimnaugh	Driver	33	20
Orvill W. Van Duzee	Ladderman	40	82
Joseph E. Chick	"	36	87
William Haley	"	38	86
Elbridge L. Wheeler	"	42	91
John Gaughan	"	44	92
Albert Smith	"	32	90
Andrew Burk	"	43	89
John B. McGuire	"	27	84
George H. Taylor	"	54	88
Thomas F. O'Connell	"	25	85
Joseph B. Farmer	"	48	83

Fire-Alarm Telegraph.

Battery Room, Brattle Square Building.

Name.	Rank.	Age.
George J. Blaisdell	Assistant Superintendent	42
Arthur W. Daniels	Repairer	33
David J. Campbell	Battery-man	39

FIRES AND ALARMS

From Dec. 1, 1885, to Dec. 1, 1886.

DECEMBER.

Monday, Dec. 7, 2:12 P. M. Box 32.

No. 141 Elm Street. Owned by J. J. Loan. Occupied by several families as dwellings. Cause, soot in chimney taking fire.

Monday, Dec. 7, 4.44 P. M. Box 9.

Otis Street. Owned by N. D. Woodbury. Occupied by Irving & Casson as manufacturers of wood mantels. Loss, trifling. Cause, gas jet setting fire to rags.

Monday, Dec. 7, 10.03 P. M. Box 79.

No. 249 Mt. Auburn Street. Owned by D. F. Burns. Loss, $10. Insurance, $2,000. Occupied by William Lee as saloon and dwelling. Cause, hanging lamp setting fire to woodwork.

Friday, Dec. 11, 12.35 P. M. Box 52.

No. 19 Putnam Avenue. Cause, smoke mistaken for fire.

Saturday, Dec. 12, 1.51 P. M. Box 23.

No. 11 Watson Street. Owned and occupied by R. G. Nixon as stable. Loss, trifling. Cause, children and matches.

Wednesday, Dec. 23, 1.11 P. M. Box 46.

No. 16 Bay Street. Owned by Vitaline Osborn. Occupied by W. J. Gorman as dwelling. Cause, paper near stove taking fire.

Thursday, Dec. 24, 10.20 P. M. Still.

No. 3 Coggswell Place. Owned by Caroline Rogers. Occupied by Elizabeth Conley as dwelling, Loss, trifling. Cause, lighted candle setting fire to bureau.

Sunday, Dec. 27, 4.10 P. M. Box 83.

Holworthy Street. Owned by T. B. Cox. Loss, $50. Insurance, $2,350. Occupied by several families as dwellings. Cause, rats and matches.

Tuesday, Dec. 29, 4.35 P. M. Box 12.

Bridge Street. False alarm. Cause, smoke mistaken for fire.

Thursday, Dec. 31, 2.38 A. M. Box 24.

No. 13 Decatur Street. Owned and occupied by Griffin & Dolan as soap factory and stable. Loss, $1,188. Insurance, $800. No. 12 Lopez Street. Owned and occupied by Michael Carr as stable. Loss, $175. Insurance, $1,000. Originated in soap factory. Cause, defective furnace.

Thursday, Dec. 31, 12.43 P. M. Box 24.

No. 165 Pearl Street. Owned by Alexander Eustis. Occupied by E. B. Glover as dwelling. Loss, $12. No insurance. Originated in bed-room. Cause, child playing with matches.

JANUARY.

Friday, Jan. 1, 11.19 P. M. Box 78.

Walden Street, (rear). Owned and occupied by E. A. Foster as brick-shed. Loss, $800. No insurance. Cause, sparks from kiln.

FRIDAY, Jan. 1, 11.30 P. M. Box 74.

Dublin Street. False alarm.

SATURDAY, Jan. 2, 12.10 A. M. Box 74.

Dublin Street. Cause, false alarm.

SATURDAY, Jan. 2, 2.32 A. M. Box 46.

No. 697 Main Street. Owned by S. E. Eaton. Loss, $95. Insurance, $5,500. Occupied by Emma Leonard as dwelling. Loss, $200. Insurance, $1,000. Cause, overheated furnace pipe.

SATURDAY, Jan. 2, 2.52 A. M. Box 74.

Dublin Street. Owned and occupied by Fitchburg Railroad Company as station-house. Loss, $86. No insurance. Cause, incendiary.

TUESDAY, Jan. 12, 5.43–5.58 P. M. Box 6.

Third Street. Owned and occupied by Seavey & Co. as tin ware manufactory. Loss, $75,211; insurance, $8,050; cause, dropping of lighted match into pan of oil.

WEDNESDAY, Jan. 13, 3.30 P. M. Still.

No. 26 Holyoke Street. Owned by C. M. Seavey. Occupied by Samuel McFadyen as dwelling. Loss, trifling. Cause, thawing out water pipe.

WEDNESDAY. Jan. 13, 10.24–10.33 P. M. Box 15.

No. 12 Charles Street. Owned by Martin Dinan as unfinished dwelling. Loss, $120; insurance, $1,500. Caused by stove in drying plastering.

SUNDAY, Jan. 17, 7.52 A. M. Box 73.

No. 105 Spruce Street. Owned and occupied by Mrs. Edmund Ager as dwelling. Loss, $72; insurance, $600; originated in basement; cause unknown.

MONDAY, Jan. 18. 8.20 P. M. Box 61.

No. 74 Boylston Street. Owned and occupied by M. F. Tracey as carpenter and builder. Loss, $50; insurance, $9,500. Originated in boiler-room. Cause, sparks from furnace.

MONDAY, Jan. 31, 11.48 P. M. Box 73.

Spruce Street. Owned and occupied by Mrs. Bridget Fitzgerald as piggery. Loss, $240; insurance, $500; cause unknown.

FEBRUARY.

SUNDAY, Feb. 7, 11.36 P. M. Box 25.

No. 440 Main Street (rear). Owned by Mason heirs. Loss, $100; insurance $600. Occupied by C. B. Moller as furniture store. Loss, $450; insurance, $1,000; originated in work room; cause unknown.

WEDNESDAY, Feb. 10, 9.16 P. M. Box 71.

North Avenue. Cause, false alarm.

THURSDAY, Feb. 11, 6.33 A. M. Box 72.

Frank Street (rear.) Owned by S. F. Woodbridge. Loss, $1,142; insurance, $3,500; occupied by Farrel & Nagle as wool-dressing establishment; loss, $10,500; insurance, $35,000; originated in drying-room; cause unknown.

FRIDAY, Feb. 12, 7.26 A. M. Box 64.

Wallace Street. Owned by James Emroe; unfinished dwelling; loss, trifling; cause, slacking lime.

TUESDAY, Feb. 16, 11 A. M. Box 24.

No. 220 Putnam Avenue. Owned by C. S. Montgomery; occupied by Sylvester Cummings as stable; loss, trifling; cause unknown.

SATURDAY, Feb. 20, 2.50 P. M. Still.

Boston, Brighton District. Engine Company No. 1 rendered assistance.

MONDAY, Feb. 22, 1.57 A. M. Box 6.

No. 7 Broadway. Owned by H. P. Ross. Occupied by E. B. Rankin as hotel. Loss, trifling; cause, explosion of kerosene lamp.

MONDAY, Feb. 22, 11 P. M. Still.

Harvard Row. Owned by Lyceum Hall Association. Occupied by several parties. No loss; originated in basement; cause unknown.

TUESDAY, Feb. 23, 9.50 A. M. Box 8.

No. 30 Vine Street. Owned by Taff heirs; occupied by several families as dwellings; cause of fire, pot of meat taking fire.

TUESDAY, Feb. 23, 9.55 P M. Box. 61.

Lyman Street. Owned by John Fowler. Loss, $300; no insurance; occupied by John Fowler and others as storage. Loss, $200; no insurance; cause unknown.

WEDNESDAY, Feb. 24, 4.55 A. M. Still.

No. 356 Main Street. Owned by Allen & Endicott. Loss, $30; occupied by William Campbell & Co. as office. Loss, $15; cause, cigar stub in paper.

WEDNESDAY, Feb. 24, 2.21 P. M. Box 48.

Oak Street. Owned by Charles Waite. Loss, $115; insurance, $2,500; occupied by several families as dwellings; cause, rats and matches.

FRIDAY, Feb. 26, 9.53 P. M. Box 73.

Spruce Street. Owned and occupied by C. E. Tibbetts as ice-house. Loss, $3,830; insurance, $4,700; cause, incendiary.

SATURDAY, Feb. 27, 7.36 A. M. Box 73.

Spruce Street. Cause, rekindling of fire.

SATURDAY, Feb. 27, 8.59 P. M. Box. 46.

No. 21 Lee Street. Owned and occupied by E. D. Brooks as dwelling. Loss, $75; insurance, $4,000; originated on second floor; cause, overheated fireplace.

MARCH.

MONDAY, March 1, 5.13 P. M. Box 72.

Dudley street. Owned by E. B. Badger. Occupied by J. W. Low as currier's shop; cause, thawing out water pipe.

TUESDAY, March 2, 1.38 A. M. Box 15.

No. 12 Charles Street. Owned by Martin Dinan. Loss, $325; insurance, $1,500; unfinished dwelling. Cause, incendiary.

THURSDAY, March 4, 8.45 P. M. Box 54.

No. 7 Kirkland Street. Owned and occupied by S. C. Batchelder as stable. Loss, $160. No insurance. Cause, incendiary.

TUESDAY, March 9, 9.50 P. M. Box 53.

De Wolf Street. Cause, false alarm.

SUNDAY, March 14, 11.10 P. M. Box 43.

No. 9 Cowperthwaite Street. Owned and occupied by Michael Sullivan as dwelling. No loss. Originated in rubbish in cellar. Cause unknown.

THURSDAY, March 18, 10.54 P. M. Box 78.

On border of Fresh Pond. Owned by Warren Institution for Savings. Loss, $26,000. Insurance $9,000. Unoccupied ice-houses. Cause, incendiary.

SUNDAY, March 21, 12.04 P. M. Box 57.

Hammond Street. In cellar of unfinished dwelling. Cause, slacking lime.

MONDAY, March 22, 9.28 P. M. Box 45.

No. 18 Soden Street. Owned by Anderson heirs. Loss, $15. Occupied by Alfred Anderson as carpenter shop. Loss, $10. Cause, incendiary.

TUESDAY, March 23, 7.56 P. M. Box 27.

Nos. 37-39 Clark Street. Owned by E. B. Phillips. Loss, $1,436. Insurance, $3,000. Occupied by Lambert Furniture Co., as furniture manufactory. Loss, $3,850. Insurance, $6,000. Originated on second floor. Cause unknown.

THURSDAY, March 25, 9.13 P. M. Box 65.

No. 13 Avon Street. Owned by F. E. Black. Occupied by J. W. Black as storage. Loss, trifling. Cause, incendiary.

SATURDAY, March 27, 7.27 P. M. Box 42.

No. 124 River Street. Haystack, owned by William Bowyer. Loss trifling. Cause, set on fire by boys.

SATURDAY, March 27, 9 P. M. Box 53.

No. 12 Holyoke Place. Owned and occupied by Ferdinand Bocher, as stable. Loss, $95. Insurance, $500. Cause, incendiary.

APRIL.

THURSDAY, April 1, 10.30 A. M. Still.

No. 433 Main Street. Cause, smoke mistaken for fire.

WEDNESDAY, April 7, 8.45 P. M. Box 56.

Kirkland Street. Owned by G. M. Lane. Loss, $1,000. No insurance. Unoccupied stable. Cause, incendiary.

SATURDAY, April 17, 1.30 P. M. Still.

Divinity Avenue. Cause, burning grass.

MONDAY, April 19, 10.05 A. M. Box 35.

No. 320 Broadway. Owned and occupied by J. S. Bright as dwelling. Loss, $82. Insurance, $5,000. Originated in bedroom. Cause, child and matches.

FRIDAY, April 23.

No. 93 Green Street. Owned by C. H. Pike. Loss, $25. Insurance, $1,600. Occupied by C. A. Gay as dwelling. Loss, $25. No insurance. Originated in clothes closet. Cause unknown.

MONDAY, April 26, 3.31 A. M. Box 15.

No. 14 Vine Street. Owned by Elizabeth Vallely. Loss, $50. No insurance. Occupied as shed. Owned by Elizabeth Vallely. Loss. $170. Insurance, $500. Occupied by several families as dwellings. No. 16 Vine Street. Owned and occupied by John Maines as stable. Loss $100. Insurance $100. Owned and occupied by John Maines as dwelling. Loss, $80. Insurance, $1,500. Chestnut Park. Owned by Hiram Leonard. Loss, $800. Insurance, $2,000. Occupied by several families as dwellings. Originated in shed. Cause unknown.

MONDAY, April 26, 9.28 A. M. Box 39.

No. 1 Avon street. Owned and occupied by Thomas Ralph as dwelling. Loss, trifling. Originated in loose straw near house. Cause, children and matches.

MONDAY, April 26, 9.52 A. M. Box 4.

Gore Street. Owned and occupied by C. W. H. Moulton & Company as ladder manufactory. Loss, trifling. Originated on roof. Cause, sparks from chimney.

WEDNESDAY, April 28, 2.35 A. M. Still.

No. 12 Brookline street. Owned and occupied by E. T. Mulloney as dwelling. Loss, $50. Insurance, $2,000. Originated in unoccupied basement. Cause, incendiary.

THURSDAY, April 29, 10.30 P. M. Box 7.

Rear 43 Charles Street. Owned by Hannah Connelly. Occupied by Margaret Thompson as dwelling. Loss, trifling. Cause, smoking pipe in bed.

MAY.

TUESDAY, May 11, 10.50 P. M. Box 10.

First Street. Owned by N. D. Woodbury. Loss, $1,275. Insurance, $2,000. Occupied by Hazlett & Underhill as boiler-room. Originated in roof. Cause, sparks from. furnace.

WEDNESDAY, May 19, 10.14 A. M. Box 92.

No. 186 Cushing street. Owned and occupied by Daniel Neill as dwelling. Loss, trifling. Cause, pan of fat taking fire.

WEDNESDAY, May 19, 8.40 —9.10 P. M. Box 6.

No. 17 Main Street. Owned by Samuel Little *et als.*, trustees. Loss, $611. Insurance, $8,000. Occupied by Damon Safe and Iron Works Company. Loss, $1,618. Insurance, $20,625. Originated on second floor. Cause, supposed by sparks from forge.

SATURDAY, May 22, 1.15 A. M. Box 61.

Boston, Brighton District. Cattle yards. Assistance called for.

MONDAY, May 24, 8.45 P. M. Box 15.

No. 118 Fourth Street. Owned and occupied by Richard Bemish as storage for rags. No loss. Cause unknown.

THURSDAY, May 27, 8.37 P. M. Box 54.

No. 12 Frisbie Place. Owned by Harvard College. Loss $235. Insurance, $2,000. Occupied by C. W. Sever as dwelling. Loss, $225. Insurance $2,000. Originated in bed-chamber. Cause, gas-jet setting fire to wood-work.

SUNDAY May 30. 2.30 P. M. Still.

Portland Street. Rubbish set on fire by boys.

JUNE.

THURSDAY, Juue 10, 3.45 A. M. Still.

No. 1 Brattle Street. Occupied by Stephen Bachler as fruit store. Loss, trifling Originated in barrel of rubbish. Cause unknown.

FRIDAY, June 18, 1.19 P. M. Box 41.

No. 6 Fairmont Avenue. Owned by S. B. Snow. Loss, $35. Insurance, $3,500. Occupied by Harrison Simpson as dwelling. Originated in attic. Cause, child and matches.

SATURDAY, June 19, 2. P. M. Still.

Hampshire Street. Owned by S. L. Montague. Occupied by several parties for business purposes. Originated on roof. Loss, slight. Cause, sparks from chimney.

WEDNESDAY, June 23, 12.19 A. M. Box 28.

Hampshire Street. Occupied by William Young as smoke-house. Loss, trifling. Cause, sparks from fire-place.

WEDNESDAY. June 23, 6.37 P. M. Box 15.

No. 27 Vine Street. Occupied by several families as dwellings. Cause, burning chimney.

FRIDAY, Jnne 25, 8.20 A. M. Box 14.

No. 159 Spring street. Owned by Timothy Desmond. Occupied by John Sullivan as dwelling. Loss slight. Originated in clothes closet. Cause, child and matches.

JULY.

FRIDAY, July 2, 8.30 A. M. Still.

Hampshire Street. Owned by S. L. Montague. Occupied by several parties for business purposes. Loss slight. Originated on roof. Cause, sparks from chimney.

SATURDAY, July 3, 5.33 A. M. Box 69.

No. 270 North Avenue. Owned and occupied by G. R. Henderson as carriage manufactory. Loss $3000. Insurance $2000. Originated in a shed. Cause unknown.

MONDAY, July 5, 9 A. M., Still.

No. 59 Sixth Street. Owned by Sheriff heirs, and occupied as dwelling. Loss trifling. Originated on roof. Cause, fire-crackers.

MONDAY, July 5, 10.45 A. M. Still.

Houghton Street. Fire in Somerville.

MONDAY, July 5, 11.30 A. M. Still.

No. 44 Fourth Street. Occupied by R. E. Price as dwelling. Loss trifling. Originated on roof. Cause, fire-crackers.

MONDAY, July 5, 3.50 P. M. Box 8.

No. 92 Third Street. Owned by J. S. Buck. Occupied by R. N. Fuller as dwelling. Loss trifling. Originated in bedroom. Cause, fire-crackers.

MONDAY, July 5, 10 P. M. Still.

No. 400 Main Street. Occupied by F. A. Clark as hulled corn manufactory. Loss trifling. Originated on roof. Cause, fireworks.

MONDAY, July 5, 11.30-11.31 P. M. Box 89.

Rear Concord Avenue. Owned and occupied by Edward Barry as dwelling. Loss $1000. Insurance, $750. Cause unknown.

TUESDAY, July 6, 10.10 A. M. Box 46.

No. 21 Hancock Street Owned by Patrick Crowley, and occupied as dwelling. Loss trifling. Originated on roof. Cause, fire-crackers:

TUESDAY, July 6, 4.51 P. M. Box 26.

State Street. Owned and occupied by M. E. Rideout as planing mill. Loss trifling, Originated in boiler-room and extended to roof. Cause, sparks from furnace.

TUESDAY, July 6, 7.44 P. M. Box 9.

No. 30 Cambridge Street. Owned by U. J. Dailey and occupied as stable. No loss. Cause, sparks from chimney

WEDNESDAY, July 7, 2.44 P. M. Box 25.

No. 19 Franklin Street. Owned by Henry Seava. Occupied as dwelling. Loss trifling. Originated on roof. Cause, sparks from chimney.

FRIDAY, July 9, 4.58 P. M. Box 24.

No. 93 Brookline Street, Owned by G. H. Brooks; occupied as dwelling. Loss trifling. Originated in bedroom. Cause, child and matches.

SATURDAY, July 10, 1.47 P. M. Box 24.

No. 15 Lopez Street. Owned by H. O. Marcy; occupied as dwelling. Loss trifling. Originated in closet. Cause, oiled rags taking fire.

SATURDAY, July 10, 3.09 P. M. Box 28.

No. 1 Hampshire Street. Owned by Geo. G. Page, Box Co. Occupied by Timothy McAvoy as dwelling. Loss $25. No insurance. Originated in bedroom. Cause, children and matches.

SUNDAY, July 11, 12.30 P. M. Still.

Portland Street. Rubbish in vacant lot. Cause, set on fire by boys.

MONDAY, July 12, 12.03 P. M. Box 37.

No. 7 Howard Street. Burning grass.

TUESDAY, July 13, 4.43 P. M. Box 28.

Rear No. 1. Hampshire Strcet. Owned by Margaret Lum; occupied as stable. Originated in manure pile. Cause, set on fire by boys.

TUESDAY, July 13, 7.43 P. M. Box 89.

Concord Avenue. Owned and occupied by Parry Bros. as engine room. Loss trifling. Originated in roof. Cause, over-heated smoke-pipe.

WEDNESDAY, July 14, 2.43-2.49 Box 89.

Concord Avenue. Owned and occupied by Frank Leger as stable. Loss $1150. Insurance $400. Owned and occupied by Frank Leger as dwelling. Loss $1063. Insurance $1600. Originated in stable. Cause, supposed incendiary.

FRIDAY, July 23, 11.53 A. M. Still.

Dyke Street. Owned by Sargent heirs; occupied as coal shed. Loss trifling. Originated on roof. Cause, sparks from hoisting engine.

FRIDAY, July 30, 3.22 P. M. Box 91.

Dover Street. Fire in Somerville.

SATURDAY, July 31, 11 A. M. Box 65.

No. 7. Shepard Street. Owned by G. A. Wood; occupied as dwelling. Loss trifling. Cause, kerosene stove taking fire.

AUGUST.

TUESDAY, Aug. 3, 2.05 P. M. Box 42.

Sands Street. Unoccupied mill. Owned by Bancroft heirs. Loss, $1300 Insurance, $1500. Cause, supposed incendiary. The roofs of several buildings in the neighborhood, were set on fire by sparks, and slightly damaged.

TUESDAY, Aug. 3, 2.11 P. M. Box 78.

Sparks Street Place. Owned and occupied by Nicholas Foran as dwelling. No loss. Originated in cellar. Cause unknown.

TUESDAY, Aug. 3, 2.48 P. M. Box 37.

No. 8 Howard Street. Owned and occupied by H. T. Weltch as dwelling. Loss $25. Insurance $2800. Originated on roof. Cause, sparks from burning building.

WEDNESDAY, Aug. 4, 11.48 P. M. Box 75.

Hubbard Avenue. Owned by Henry Emerson; formerly used as privy. Loss trifling. Cause, incendiary.

THURSDAY, Aug. 5, 7.35 P. M. Still.

Soden Street. Owned by Cyrus Fellows. Unoccupied stable. No loss. Cause, set on fire by boys.

MONDAY, Aug. 9, 8.33 P. M. Box 45.

Soden Street. Owned by Cyrus Fellows. Unoccupied stable. Loss trifling. Cause, set on fire by boys.

TUESDAY, Aug. 17, 11.12 A. M. Box 36.

No. 4 Pearl Street. Owned by W. F. Watson. Loss $900. Insurance $6000. Occupied by A. G. Pond as barber. Loss $500. Insurance $300. No. 6 Pearl Street. Owned by W. F. Watson. Loss $68. Insurance $1000. Occupied by S. C. Higgins as tin and sheet iron worker. No. 7 Pearl Street. Owned by Hancock heirs. Loss $30. Insurance $1200. Occupied by John Hancock as harness maker. Originated in barber shop. Cause, bursting of a kerosene lamp.

FRIDAY, Aug. 20, 3.50 P. M. Box 42.

No. 126 River Street. Haystack. Owned by William Bowyer. Loss trifling. Cause, supposed set on fire by boys.

SATURDAY, Aug. 21, 3.29 P. M. Box 52.

No. 248 Franklin Street. Owned by John O'Brien; occupied as dwelling. No loss. Cause, wood near stove taking fire.

SUNDAY, Aug. 22, 4.29 A. M. Box 43.

No. 5. Beaver Street. Owned and occupied by John Clifford as dwelling. Loss $363. Insurance $2000. Originated in pantry. Cause unknown.

WEDNESDAY, Aug. 25, 12.49 P. M. Box 25.

No. 46 Austin Street. Cause, smoke mistaken for fire.

THURSDAY, Aug. 26, 5.13 A. M. Box 12.

North Street. Owned by New England Glass Co. Occupied as glass manufactory. Loss trifling. Originated in cave. Cause, oil taking fire.

SEPTEMBER.

WEDNESDAY, Sept. 1, 3.10 P. M. Box 25.

No. 17 State Street. Owned by H. T. Russ; occupied as dwelling. No loss. Originated in shed. Cause, children and matches.

TUESDAY, Sept. 7, 7 P. M. Box 75.

No. 24 Hubbard Avenue. Owned and occupied by C. S. Seagrave as dwelling. Loss, $50. Insurance $3500. Cause, breaking of kerosene lamp.

FRIDAY, Sept. 10, 8.14 A. M. Box. 25.

No. 15 State Street. Owned by H. T. Russ; occupied as dwelling. Originated in attic. Cause, children and matches.

THURSDAY, Sept. 23, 8.27 A. M. Box 17.

Brimmer Place. Owned and occupied by B. W. Hamilton as dwelling. Loss $105. Insurance $1200. Originated in a lounge. Cause unknown.

SATURDAY, Sept. 25, 5, A. M. Box 75.

Walden Street. Owned by E. E. Keyes; occupied as dwelling. Loss trifling. Originated in outhouse. Cause unknown.

SUNDAY, Sept. 26, 6.30 P. M. Still.

No. 10 Farwell Place. Owned and occupied by Mrs. Joseph Sanderson as dwelling. Loss $77. Insurance $5000. Cause, clothes taking fire from lighted lamp.

OCTOBER.

WEDNESDAY, Oct. 6, 6.18 P. M. Box 78.

Garden Street Court. Owned by William Smith; unoccupied shed. Loss trifling. Cause, supposed set on fire by boys.

THURSDAY, Oct. 7, 8.39 P. M. Box 72.

45 Cedar Street. Owned and occupied by P. J. Mahoney as dwelling. Loss $5. Insurance $1800. Cause, explosion of kerosene lamp.

FRIDAY, Oct. 8. 9 P. M. Still.

No. 24 Church Street. Owned by J. S. Pike. Loss $25. Insurance $3500. Occupied as club room. Cause, defective fire-place.

SATURDAY, Oct. 9, 11.55 P. M. Box 25.

No. 442-444 Main Street. Owned by H. T. Russ. Loss $358. Insurance $1500. Occupied by W. A. Waugh as carriagesmith. Loss $1600. Insurance $1000. Originated in office. Cause unknown.

SUNDAY, Oct. 10, 10.36 P. M. Box 39.

Rear No. 185 Brookline Street. Owned and occupied by M. P. Brown as dwelling. Loss $1116. Insurance $1400. Cause, breaking of kerosene lamp.

TUESDAY, Oct. 12, 9.11 P. M. Box 52.

Putnam Avenue. Owned by W. W. Walker *et als.* Unoccupied skating rink. No loss. Cause, incendiary.

WEDNESDAY, Oct. 13, 8.22 A. M. Box 45.

No. 167 Franklin Street. Owned by Patrick O'Connor; occupied as dwelling. Loss trifling. Originated in child's crib. Cause, child and matches.

FRIDAY, Oct. 15, 3.21 P. M. Box 72.

Cedar Street. Haystack. Owned by John Kneeland. Loss, trifling. Cause, set on fire by children.

MONDAY, Oct. 18, 9.05 P. M. Box 36.

No. 613 Main Street. Owned by Watriss estate. Occupied by William Milligan as dentist. Loss, trifling. Cause, ignition of gas.

WEDNESDAY, Oct. 20, 6.15 P. M. Still.

Rear No. 84 Inman Street. Owned by S. G. Cottrell; unoccupied stable. Cause, set on fire by boys.

THURSDAY, Oct. 21, 11.52 P. M. Box 29.

No. 11 Cherry Street. Owned and occupied by Wellington Fillmore as carpenter shop. Loss, $349. Insurance $500. Cause, supposed incendiary.

FRIDAY, Oct. 22, 2.27 P. M. Box 89.

Rear Concord Avenue. Owned and occupied by Fitchburg R. R. Co. as switch-house. Loss $20. Cause, sparks from locomotive.

SATURDAY, Oct. 23, 12.40 P. M. Box 87.

Concord Avenue. Cause, burning brush and grass.

SUNDAY, Oct. 24, 1.44 P. M. Box 73.

Concord Avenue. Cause, burning brush and grass.

MONDAY, Oct. 25, 12.43-2.48 P. M. Box 26.

No. 400 Main Street. Owned by J. S. Woodward. Loss $250. No insurance. Occupied by F. A. Clark as hulled corn manufactory. Loss $294. Insurance $1100. Rear 398 Main Street. Owned and occupied by Otis Howe as store-house. Loss $50. Originated in hulled corn factory. Cause unknown.

SATURDAY, Oct. 30, 9.38 P. M. Box 59.

No. 5 Harvard Row. Owned by Harvard College. Loss $85. Insurance $30,000. Occupied on ground floor for business purposes, and the upper stories as dormitory. Originated on second floor in sleeping room. Cause, hot coals dropping from grate and setting fire to floor.

NOVEMBER.

MONDAY, Nov. 1, 6.47 P. M. Box 12.

North Street. Cause, false alarm.

FRIDAY, Nov. 5, 8.50 A. M. Still,

No. 6 Oak Street. Owned by W. L. Lockhart. Loss $40. Insurance $6000. Occupied by E. J. Hadley as dwelling. Loss $100. Originated in bedroom. Cause unknown.

HYDRANTS.

Ward One.

Appleton Street, corner Highland.
Ash Street, corner Acacia.
Baldwin Street, corner Emmons Place.
Banks Street, corner Flagg.
Banks Street, corner Cowperthwaite.
Banks Street, corner Grant.
Bow Street, corner Linden (post).
Boylston Street, corner Winthrop (post).
Boylston Street, corner Eliot (post).
Brattle Street, opposite the estates of Messrs. Longfellow and Hastings.
Brattle Street, corner Ash.
Brattle Street, corner Hilliard.
Brattle Street, opposite University Press (post).
Brattle Street, corner Lowell.
Brattle Street, corner Fresh Pond Lane.
Brattle Street, opposite Mount Auburn greenhouse.
Brattle Street, front of Mrs. Wyeth's estate.
Brattle Street, corner Willard.
Brattle Street, corner Story.
Brattle Street, corner Channing.
Brattle Street, corner Lake View Avenue.
Brattle Street, corner Hawthorn (post).
Brattle Street, near Boylston (post).
Broadway, junction Cambridge Street.
Broadway, near junction Cambridge Street (post).
Broadway, corner Prescott Street.
Broadway, corner Trowbridge Street.
Broadway, corner Quincy Street.
Broadway, corner Ware Street.
Broadway, corner Ellery Street.
Buckingham Street, opposite Stevens's barn.
Buckingham Street, corner Concord Avenue (post).
Cambridge Street, corner Trowbridge.
Cambridge Street, corner Sumner.
Cambridge Street, front of Scientific School (post).
Cambridge Street, corner Quincy (post).
Cambridge Street, opposite Felton (post).
Cambridge Street, corner Ellery (post).
Chauncy Street, near Garden (post).
Chauncy Street, corner Langdon.
Church Street, corner Palmer.
Concord Avenue, corner Sparks Street.
Concord Avenue, opposite Craigie Street.
Concord Avenue, corner Follen Street (post).
Concord Avenue, corner Sparks Street (post).
Coolidge Avenue, between Mt. Auburn Street and Cambridge Cemetery gate (2 posts).
Craigie Street, midway.
Craigie Street, near corner Sparks.
Cushing Street, opposite Cushing Place (post).
Cushing Street, opposite Vineyard (post).
Cushing Street, southerly end (post).
De Wolf Street, near Cowperthwaite.
Divinity Avenue (post).
Dunster Street, corner South.
Dunster Street, corner Mt. Auburn.
Dunster Street, near Harvard Square (post).
Eliot Street, in elbow (post).
Eliot Street, corner Winthrop (post).
Ellery Street, corner Harvard (post).
Ellery Street, corner Main.
Ellery Street, east side, midway between Broadway and Cambridge Streets.
Elmwood Avenue, midway (post).
Everett Street, south side, midway between North Avenue and Oxford Street.
Fayerweather Street, corner Brattle.
Fayerweather Street, opposite Reservoir.
Flagg Street, corner Beaver (post).
Foster Street, corner Foster Place (post).
Garden Street, near Chauncy (post).
Garden Street, corner Mason.
Garden Street, corner Wallace.

Grant Street, corner De Wolf.
Harvard Square, opposite Charles River Bank (post).
Harvard Street, junction Main (post).
Harvard Street, corner Remington.
Harvard Street, opposite Harvard Block (post.)
Harvard Street, opposite Linden (post).
Harvard College grounds, (3 posts).
Hawthorn Street, corner Acacia (post).
Holworthy Street, opposite school-house (post).
Holworthy Street, southerly end (post).
Kirkland Street, corner Baldwin.
Kirkland Street, corner Trowbridge.
Kirkland Street, corner Irving.
Kirkland Street, corner Sumner.
Kirkland Street, corner Quincy.
Kirkland Street, opposite Memorial Hall.
Lake View Avenue, 500 feet from Brattle Street.
Lake View Avenue, near Brattle Street (post).
Lake View Avenue, corner Huron Street. (post).
Lake View Avenue, on hill (post).
Lake View Avenue, near engine-house (post).
Langdon Street, in elbow (post).
Lexington Avenue (post).
Locust Street, corner Holworthy (post).
Main Street, corner Trowbridge.
Main Street, near Baptist Church.
Mellen Street, corner Oxford.
Mill Street, corner Holyoke (post).
Mill Street, corner Charles River.
Mt. Auburn Street, corner Brighton (post).
Mt. Auburn Street, opposite Athens.
Mt. Auburn and Bow Streets.
Mt. Auburn Street, opposite De Wolf.
Mt. Auburn Street, corner Willard (post).
Mt. Auburn Street, corner Sparks (post).
Mt. Auburn Street, opposite McDonald's marble works.
Mt. Auburn Street, opposite railroad stables (post).
Mt. Auburn Street, near Lowell (post).
Mt. Auburn Street, corner Dunster (post).
Mt. Auburn Street, corner Holyoke (post).
Mt Auburn Street, corner Athens (post).
Mt. Auburn Street, corner Banks (post).
Mt. Auburn Street, corner De Wolf (post).
Mt. Auburn Street, corner Story (post).
Mt. Auburn Street, corner Hilliard (post).
Mt. Auburn Street, opposite City Building (post).
Mt. Auburn Street, opposite Brewer (post).
Mt. Auburn Street, corner Auburn Place (post).
Mt. Auburn Street, opposite Bath (post).
Mt. Auburn Street, near Coolidge Lane (post).
Mt. Auburn Street, corner Elmwood Avenue (post).
Mt. Auburn Street, corner Channing (post).
Murray Street, near Charles River.
Murray Street, corner Lyman (post).
North Avenue, corner Chauncy Street.
North Avenue, corner Shepard Street (post).
North Avenue, corner Holmes Place.
North Avenue, corner Jarvis Street.
North Avenue, front of burial-ground (post).
North Avenue, corner Church Street.
North Avenue, corner Garden Street (post).
Oxford Street, near Jarvis.
Oxford Street, corner Everett.
Phillips Place, corner Berkeley Street.
Prescott Street, corner Harvard.
Prescott Street, between Harvard Street and Broadway (post).
Putnam Avenue, corner Western Avenue.
Putnam Avenue, between Mt. Auburn and Main Streets (post).
Putnam Avenue, corner Flagg Street (post).
Putnam Avenue, opposite Putnam Court (post).
Putnam Avenue, near Hews Street (post).
Putnam Avenue, corner Sands Street (post).
Quincy Street, midway between Harvard and Broadway (post).
Riedesel Avenue, corner Brattle (post).
Sands Street, opposite planing-mill.
South Street, corner Dunster (post).
Sparks Street, corner Vassal Lane (post).
Sparks Street, corner Foster (post).
Sparks Street, opposite Charles T. Russell's (post).
Trowbridge Street, midway between Main and Harvard (post).
Waterhouse Street, opposite Concord Avenue (post).
Waterhouse Street, opposite Follen (Post).

Wendell Street, near Carver (post).
Wendell Street, midway between North Avenue and Oxford Street (post).
Willard Street, corner Foster (post).
Worthington Street, near engine-house of Water works (post).

Ward Two.

Amory Street, corner Summer (post).
Antrim Street, near Broadway (post).
Antrim Street, near Cambridge (post).
Antrim Street, midway (post).
Austin Street, near Essex (post).
Austin Street, corner Prospect (post).
Austin Street, corner Temple (post).
Bigelow Street, midway between Main and Harvard.
Brewery Street, near Hastings (post).
Bristol Street, corner Portland (post).
Broadway, corner Highland Avenue.
Broadway, corner Hancock Street.
Broadway, corner Antrim Street.
Broadway, corner Tremont Street (post).
Broadway, corner Elm Street.
Broadway, corner Pelham Street.
Broadway, corner Dana Street.
Broadway, corner Ellsworth Avenue.
Broadway, corner Fayette Street.
Broadway, corner Amory Street.
Broadway, corner Norfolk Street.
Broadway, corner Boardman Street.
Broadway, opposite Thayer's Laboratory (post).
Broadway, near Broadway House.
Broadway, corner Clark Street (post).
Broadway, corner Third Street (post).
Broadway, corner Davis Street (post).
Broadway, corner Brewery Street (post).
Broadway, opposite Mason & Hamlin's building (post).
Broadway, near Sixth Street (post).
Broadway, corner Pioneer Street (post).
Cambridge Street, corner Harding.
Cambridge Street, corner Norfolk.
Cambridge Street, corner Willow.
Cambridge Street, corner Prospect (post).
Cambridge Street, corner Tremont.
Cambridge Street, opposite Fayette.
Cambridge Street, corner Springfield.
Cambridge Street, opposite head of Maple Avenue.
Cambridge Street, corner McCabe (post).
Cambridge Street, corner Elm (post).
Cambridge Street, corner Winsor (post).
Cambridge Street, near Mr. Rafferty's house (post).
Cambridge Street, nearly opposite Ellsworth Avenue (post).
Centre Street, opposite No. 14.
Clinton Street, near G. T. Gale's house (post).
Columbia Street, corner Lincoln.
Columbia Street, corner Market.
Columbia Street, corner Hampshire.
Columbia Street, corner Harvard.
Dana Street, corner Chatham (post)
Dana Street, between Broadway and Cambridge Street (post).
Davis Street, corner Broadway.
Elm Street, opposite Lincoln (post).
Elm Street, corner Market.
Essex Street, westerly side, midway between Harvard and Austin (post).
Fayette Street, 500 feet from Broadway (post).
Hampshire Street, corner Amory (post).
Hampshire Street, near Somerville line (post).
Hampshire Street, corner Portland (post).
Harvard Street, corner Pine.
Harvard Street, corner Hancock.
Harvard Street, corner Clark.
Harvard Street, corner Dana.
Harvard Street, corner Moore.
Harvard Street, corner Norfolk.
Harvard Street, corner Portland.
Harvard Street, corner Brewery.
Harvard Street, corner Clinton.
Harvard Street, near Railroad Crossing (post).
Harvard Street, between Railroad Crossing and Brewery Street (post).
Harvard Street, opposite Davis (post).
Harvard Street, corner Cherry (post).
Harvard Street, corner Winsor (post).
Harvard Street, opposite Elm (post).
Harvard Street, corner Essex (post).
Harvard Street, corner Prospect (post).
Harvard Street, between Prospect and Inman (post).
Harvard Street, corner Bigelow (post).
Harvard Street, corner Lee (post).
Highland Avenue, east side, midway.

Houghton Street, corner Bolton, in Somerville.
Hunting Street, 400 feet from Cambridge.
Inman Street, near Austin.
Inman Street, corner Harvard.
Inman Street, corner Broadway.
Inman Street, opposite No. 110 (post).
Inman Street, opposite Summer.
Jefferson Street, corner Harding.
Jefferson Street, corner Warren (post)
Jefferson Street, opposite McCabe (post).
Lee Street, midway between Main and Harvard (post).
Main Street, corner Lee.
Main Street, corner Hancock.
Main Street, opposite Bay.
Main Street, corner Pelham (post).
Main Street, corner Essex.
Main Street, opposite Pleasant.
Main Street, corner Bigelow.
Main Street, junction Harvard.
Main Street, corner Pioneer (post).
Main Street, opposite Rawson & Hittinger's.
Main Street, opposite Pearl (post).
Main Street, Gale's driveway (post).
Main Street, corner Third (post).
Maple Avenue, midway between Broadway and Cambridge Street (post).
Market Street, corner Union.
Moore Street, head of Hastings.
Norfolk Street, corner Hampshire.
Norfolk Street, corner Worcester.
Norlolk Street, head of Washington(post).
Norfolk Street, opposite No. 95 (post).
Oak Street, west side,near Somerville line.
Plymouth Street, corner Berkshire.
Porter Street, corner Bedford (post).
Porter Street, corner Harding (post).
Portland Street, opposite rolling-mill, (post).
Portland Street, corner York (post).
Prospect Street, opposite Mr. Tilton's.
Prospect Street, corner Broadway.
Prospect Street, corner Hampshire.
Prospect Street, corner Main.
Prospect Street, corner Gardner.
Prospect Street, opposite School-house, Somerville.
Prospect Street, corner Webster Avenue, Somerville.
Seckel Street, corner Webster Avenue, (post).
South Street, opposite Willow, Somerville.
South Street, corner Gore, Somerville.
Tremont Street, near Wellington's house (post).
Tremont Street, near Hampshire (post).
Tremont Street, opposite Gardner (post).
Tremont Street, west side, 200 feet from Cambridge.
Union Street, corner Hampshire.
Ward Street, corner Horace, Somerville.
Webster Avenue, corner Elm Street.
Webster Avenue, corner Bristol Street.
Webster Avenue, corner Winsor Street.
Webster Avenue, corner Hampshire Street.
Webster Avenue, corner Plymouth Street.
Webster Avenue, corner Cambridge Street (post).
West Boston Bridge.
West Boston Bridge.
West Street, midway (post).
Winsor Street, corner Lincoln.
Winsor Street, corner Hampshire.
Winsor Street, corner Washington.
Winsor Street, near Somerville line (post).
Winsor Street, corner Broadway (post).
Washington Street, corner Munson (post).

Ward Three.

Binney Street, corner Ninth (post).
Binney Street, near Railroad Crossing (post).
Bridge Street, at Wellington's Wharf (post).
Bridge Street, at Sanborn's Wharf (post).
Bridge Street, corner Prison Point.
Bridge Street, corner Short.
Bridge Street, corner Short (post).
Bridge Street, corner Water.
Bridge Street, near Bay State glass-house (post).
Bridge Street, north side, opposite Braman, Shaw & Co.'s.
Bridge Street, opposite Fourth (post).
Bridge Street, between Short and Water (post).
Bridge Street, near Cambridge (post)

Bridge Street, corner Water (post).
Bridge Street, corner East (post).
Bridge Street, near bridge (post).
Cambridge Street, opposite First.
Cambridge Street, corner Carson.
Cambridge Street, corner Daily's Alley.
Cambridge Street, corner Third.
Cambridge Street, junction Bridge.
Cambridge Street, corner Sixth.
Cambridge Street, near Railroad Crossing (post).
Cambridge Street, opposite Seventh (post).
Cambridge Street, opposite No. 141 (post).
Cambridge Street, near Third (post).
Cambridge Street, corner Fourth (post).
Charles Street, corner Fourth.
Charles Street, corner Third (post).
East Street, corner North (post).
Eighth Street, corner Cambridge.
Fifth Street, corner Winter (post).
Fifth Street, corner Charles.
Fifth Street, corner Spring.
Fifth Street, corner Cambridge.
Fifth Street, corner Gore.
Fifth Street, corner Bent (post).
Fifth Street, corner Rogers (post).
First Street, corner Charles (post).
First Street, near Otis (post).
First Street, corner Spring (post).
First Street, corner Vine (post).
Fourth Street, corner Winter (post).
Fourth Street, corner Winter.
Fourth Street, corner Cambridge.
Fourth Street, corner Vine.
Fourth Street, corner Thorndike.
Gore Street, corner Third (post)
Gore Street, corner Fourth.
Gore Street, corner Carson (post).
Gore Street, corner Seventh (post).
Gore Street, between Fourth and Fifth (post).
Gore Street, between Fifth and Sixth (post).
Munroe Street, corner Third (post).
North Street, corner East.
North Street, opposite Short (post).
North Street, near Water (post).
Ninth Street, corner Thorndike (post).
Otis Street, corner Third.
Otis Street, corner Seventh.
Otis Street, corner Ninth (post).
Potter Street, corner Ninth (post).
Prison Point Street, 50 feet north of ice-sheds (post).
Prison Point Street, on railroad track, 300 feet from street.
Prison Point Street, near passenger track (post).
Prison Point Street, on railroad track, 600 feet from street.
Prison Point Street, 400 feet from Bridge Street.
Prison Point Street, near Bridge (post).
Prison Point Street, near ice-house (post).
Rogers Street, corner Third (post).
Second Street, corner Thorndike.
Second Street, corner Otis.
Second Street, corner Cambridge.
Sixth Street, corner Gore.
Sixth Street, corner Potter.
Sixth Street, corner Charles (post).
Sixth Street, corner Spring (post).
Spring Street, corner Second.
Spring Street, corner Third.
Spring Street, corner Fourth.
Spring Street, corner Ninth (post).
Third Street, corner Vine.
Third Street, near Charles (post).
Third Street, corner Bridge (post).
Third Street, corner Potter.
Third Street, opposite gas-works (post).
Thorndike Street, corner Sixth.
Thorndike Street, corner Fifth.
Thorndike Street, near Woodbury's mill (post).
Thorndike Street, corner Second (post).
Vine Street, corner Fifth.
Vine Street, corner Sixth.
Water Street, near sugar-house.
Yard of American Rubber Co. (post).

Ward Four.

Albany Street, corner Main (post).
Albany Street, opposite Portland (post).
Austin Street, corner Douglass (post).
Austin Street, corner Norfolk (post).
Blackstone Street, west side, 100 feet from avenue (post).
Blackstone Street, opposite Riverside Press (post).

Brookline Street, corner Allston.
Brookline Street, corner Hamilton.
Brookline Street, corner Valentine.
Brookline Street, corner Putnam Avenue.
Brookline Street, corner Erie.
Brookline Street, corner Franklin.
Brookline Street, corner Chestnut.
Brookline Street, near Henry (post)
Brookline Street, corner Decatur (post).
Brookline Street, corner Lopez (post).
Brookline Street, corner Watson (post).
Cherry Street, opposite Eaton.
Chestnut Street, corner Pearl.
Columbia Street, corner Austin.
Columbia Street, corner Washington.
Cottage Street, corner Pearl (post).
Eaton Street, corner Pine (post).
Erie Street, corner Pearl (post).
Erie Street, between Pearl and Brookline (post).
Fairmont Street, corner Andrew (post).
Franklin Street, corner Soden (post).
Franklin Street, corner Hancock (post).
Franklin Street, corner Bay (post).
Franklin Street, near the hill (post).
Franklin Street, corner Sidney.
Franklin Street, midway between Brookline and Sidney (post).
Franklin Street, corner Magazine.
Franklin Street, corner Pleasant.
Franklin Street, near Putnam Avenue (post).
Front Street, junction State.
Front Street, corner Columbia (post).
Green Street, opposite Vernon.
Green Street, corner Putnam Avenue.
Green Street, corner Hancock (post).
Green Street, corner Bay (post).
Green Street, midway between Hancock and Vernon (post).
Green Street, corner Vernon (post).
Green Street, corner Pleasant (post).
Green Street, corner Western Avenue (post).
Green Street, corner Pearl (post).
Green Street, corner Brookline (post).
Grigg Street, corner Putnam Avenue.
Henry Street, near Hastings (post).
Kinnaird Street, corner Bay (post).
Magazine Street, corner Cottage.
Magazine Street, corner Putnam Avenue.
Magazine Street, corner Warland.
Magazine Street, corner Auburn.
Magazine Street, corner Park.
Magazine Street, corner Upton.
Magazine Street, opposite Hamilton.
Magazine Street, opposite Allston (post.)
Magazine Street. corner Florence.
Magazine Street, corner Green (post).
Main Street, corner Harrison (post).
Main Street, corner Columbia.
Main Street, corner Winsor.
Main Street, corner Norfolk.
Main Street, junction Austin.
Main Street, north side, opposite Kennedy's bakery.
Main Street, corner Portland.
Osborn Street, corner State (post).
Osborn Street, corner Main (post).
Pacific Street, corner Sidney.
Pacific Street, near Albany.
Pearl Street, corner Lake.
Pearl Street, corner Allston (post).
Pearl Street, corner Putnam Avenue.
Pearl Street, corner Decatur.
Pearl Street, corner Auburn.
Pearl Street, corner Glenwood (post).
Pleasant Street, corner Florence (post).
Pleasant Street, corner Upton.
Pleasant Street, corner Somerset.
Pleasant Street, corner Park.
Pleasant Street, corned Prince.
Pleasant Street, corner Pleasant Place (post).
Pleasant Street, corner Chestnut (post).
Pleasant Street, corner Franklin (post).
Portland Street, corner Main (post).
Putnam Avenue, opposite Ballard Place (post).
Putnam Avenue, near River Street (post).
Putnam Avenue, corner River Street (post).
Putnam Avenue, corner Walnut Court (post).
Putnam Avenue, corner Pleasant Street (post).
Putnam Avenue, between River and Pleasant Streets (post).
Putnam Avenue, corner Waverly Street (post).
River Street, corner Franklin.
River Street, opposite Cottage.
River Street, opposite Laurel.
River Street, corner Blackstone.
River Street, opposite Fairmont.
School Street, corner Clark.
School Street, corner Portland (post).
School Street, corner Clark (post).
School Street, corner Moore (post).
Somerset Street, corner Andrew (post).

State Street, opposite Village (post).
State Street, near Howe's Factory (post).
Sidney Street, corner Allston.
Sidney Street, corner Putnam Avenue.
Sidney Street, corner Chestnut.
Sidney Street, corner Front (post.)
Sidney Street, corner Green (post),
Washington Street, corner Brewery (post).
Washington Street, corner Clark.
Washington Street, corner Portland (post).
Washington Street, corner Moore (post).
Waverly Street, corner Allston (post).
Western Avenue, corner Howard street.
Western Avenue, corner Kinnaird street.
Western Avenue, corner Jay street.
Western Avenue, opposite Soden street. (post).
William Street, between Magazine and River (post).

Ward Five.

Arlington Street, 500 feet from North Avenue (post.)
Bates Street (post).
Beech Street east side, 20 feet from Orchard.
Bellevue Avenue, corner Avon Hill Street, (post).
Belmont Street, corner Montgomery (post).
Blake street, corner North Avenue (post).
Cedar Street, corner Spruce.
Cedar Street, opposite Norris.
Cedar Street, opposite hotel.
Coggswell Avenue, corner Mead Street.
Concord Avenue, corner Madison Street.
Concord Avenue, opposite Bond Street.
Concord Avenue, corner Walden Street.
Concord Avenue, opposite Eames's estate (post.)
Crescent Street, corner Sacramento (post).
Donnell Street, corner Garden.
Dublin Street, 525 feet from Spruce.
Dublin Street, 620 feet from Walden.
Dublin Street, corner Walden.
Dublin Street, corner Bolton.
Dublin Street, corner Railroad (post).
Fairfield Street, opposite Mr. Whitney's.
Forest Street, corner Frost (post.)
Garden Court, corner Dublin Street.
Garden Street, opposite Bond.
Garfield Street (post).
Garfield Street, corner Oxford (post).
Garfield Street, corner North Avenue, (post).
Harris Street, corner Frost (post).
Harvey Street, opposite Montgomery.
Hollis Street, at the elbow.
Hubbard Avenue, opposite Brick block.
Hubbard Avenue, corner Raymond Street.
Lambert Avenue, corner Walnut Avenue (post).
Lambert Avenue, corner North Avenue (post).
Lambert Avenue, corner Lancaster Avenue (post.)
Lancaster Avenue, corner Agassiz Street (post).
Linnæan Street, corner Avon.
Linnæan Street, corner Bowdoin.
Linnæan Street, corner Raymond.
Martin Street, corner Hurlburt (post).
Milk Street, corner White.
Milk Street, near Somerville line (post).
Montgomery Street, 300 feet from Harvey (post).
Mt. Vernon Street, corner North Avenue (post).
Norris Street, midway (post).
North Avenue, near railroad bridge.
North Avenue, corner Cogswell Avenue.
North Avenue, corner Allen Street.
North Avenue, corner Dover Street.
North Avenue, 300 feet west of Tannery.
North Avenue, corner Sacramento Street.
North Avenue, opposite Linnæan Street.
North Avenue, corner Chester Street.
North Avenue, corner Arlington Street.
North Avenue, corner Rice Street.
North Avenue, corner Cedar Street.
North Avenue, opposite Tannery.
North Avenue, opposite No. 368 (post).
North Avenue, near Walcott Richardson's gate.
North Avenue, corner Beech.
North Avenue, corner Frank Street (post).
North Avenue, corner Day Street.
Norton Street, midway.
Orchard Street, near Davenport (post).

Orchard Street, opposite Tenney Court.
Oxford Street, corner Forest.
Oxford Street, corner Sacramento.
Pemberton Street, 500 feet from North Avenue (post).
Pemberton Street, corner Fairfield (post).
Raymond Street, south side (2), near Mr. Dresser's estate.
Reed Street, 250 feet from Harvey.
Reed Street, opposite school-house.
Rice Street, opposite L. L. Cushing's.
Richdale Avenue, corner Raymond Street.
Richdale Avenue, near Raymond Street (post).
Roseland Street, corner Frost.
Shepard Street, corner Avon.
Spruce Street, corner Hollis.
Spruce Street, corner Jackson (post).
Spruce Street, corner Reed.
Spruce Street, corner Montgomery.
Spruce Street, corner North Avenue.
Spruce Street, opposite school-house.
Spruce Street, corner Clay.
Spruce Street, corner Clifton.
Tannery Street, (3), between North Avenue and Almshouse (posts).
Tuttle Street, opposite Ladd's barn.
Walden Street, corner Mead.
Walden Street, corner North Avenue (post).
Walden Street, corner Hubbard Avenue.
Wallace Street, in the elbow.
Washington Avenue, corner Dexter.
Washington Avenue, corner Hillside Avenue (post).
Washington Avenue, 400 feet from Linnæan Street (post).
Wyeth Street, corner Garden.

RESERVOIRS.

Ward One.

College Yard.

Garden Street, north end of Appian Way.

Ward Two.

Essex Street, corner Austin.

Harvard Street, opposite Broadway Park.

Ward Three.

Cambridge Street, 70 feet east of Third.
Gore Street, corner North Third.
Junction Bridge and Gore Streets.
Otis Street, corner Fourth.
Thorndike Street, corner Third.
Under New England Glass Company's building.
Under Lowell Railroad machine-shop.

Ward Four.

Junction Western Avenue and Pleasant Street.
Lafayette Square (2).
Main Street, corner Brookline.

CAMBRIDGE FIRE-ALARM TELEGRAPH.

LOCATION OF BOXES.

2. Prison Point Street, corner Bridge.
4. Gore, J. P. Squire's building.
6. Third, corner Broadway.
7. Third, corner Bent.
8. Thorndike, corner Third.
9. Cambridge, near First.
10. Thorndike, near First.
12. Winter, corner Third.
12. North, corner Water (duplicate).
13. Fourth, Engine-House No. 3.
14. Sixth, corner Cambridge.
15. Vine, corner Fifth.
16. Broadway, Greely's mill.
17. Washington, corner Brewery.
21. Sidney, corner Allston.
23. Pearl, corner Auburn.
24. Brookline, corner Valentine.
25. Main and Front (junction).
26. Main, corner Osborn.
27. Clark, corner Harvard.
28. Broadway, opp. Page's box factory.
29. Pine, corner Washington.
31. Cambridge, corner Harding.
32. Columbia, corner Cambridge.
34. Hampshire, corner Columbia.
35. Harvard, corner Norfolk.
36. Main, corner Western Avenue.
37. Pleasant and River (junction).
38. Magazine, corner Lake.
39. Magazine, corner Chestnut.
41. Pleasant, corner Fairmont.
42. Blackstone, opp. Riverside Press.
43. Banks, corner Flagg.
45. Franklin, near Soden.
46. Main, corner Hancock.
47. Broadway, corner Antrim.
48. Cambridge, corner Hampshire (junction).
49. Cambridge, corner Baldwin.
51. Broadway, corner Ellery.
52. Mt. Auburn and Main (junction).
53. Mt. Auburn, corner Holyoke Place.
54. Cambridge, Memorial Hall (south side).
56. Kirkland, corner Sumner,
57. Oxford, corner Mellen.
59. Harvard Square, Ramsey's drug [store.
61. Brattle Square, City Building.
62. Mt. Auburn, corner Hilliard.
63. Brattle, corner Mason (junction).
64. Chauncy, corner Garden.
65. North Avenue, corner Shepard.
68. North Avenue, near railroad bridge.
69. North Avenue, Engine-House No. 4.
71. North Avenue, near Tannery.
72. Cedar, hotel building.
73. Spruce, near Bay State brick-yard.
74. Dublin, corner Railroad.
75. Walden, corner Raymond.
76. Walnut Avenue, corner Arlington.
78. Concord Avenue, corner Sparks.
79. Brattle, corner Sparks.
82. Brattle, corner Elmwood Avenue.
83. Mt. Auburn, near railroad stable.
87. Lake View Avenue, near junction Concord Avenue.
89. Concord Avenue, near Hittinger's ice-houses.
91. North Avenue, Cambridge Railroad car-house.
92. Locust, corner Cushing.
114. Ninth Street, Goepper Brothers' barrel factory.
116. Broadway, Tower's piano-action factory.
125. Green, F. A. Kennedy's cracker bakery.
134. City stable, Tremont, corner Hampshire.
152. Main, corner Bow.
216. Potter, rubber-factory yard.

Instructions to Key Holders.

Alarms to be given from the box nearest the location of the fire.

Don't give an alarm for a fire seen at a distance, unless assistance is called for.

To give an alarm, open the door, pull the hook to the bottom of the slot once, and let go. Each box contains a small bell, which, if heard before you pull, indicates that an alarm has been previously given; and, by listening at the box, you will learn the number of the box from which the alarm was given; but in no case must you pull the hook while the alarm is striking. After giving the alarm, remain at the box, so as to direct the firemen to the fire. Be sure that you lock the box before leaving it.

Citizens are requested to inform themselves where keys to the signal-boxes are kept, signs suitably inscribed being placed over each box, giving the requisite information.

Instructions to Firemen.

First alarm will be given by striking THREE or more rounds.

Second alarm will be given by repeating the first.

General alarm will be given by striking THREE BLOWS on the gongs and bells.

In cases where hook-and-ladder companies only are wanted, the call will be given by striking FIVE BLOWS.

Companies not required to respond to first or second alarms will be notified by TWO BLOWS on the gongs of the extinguishment of a fire, that their services will not be needed, and that orders have been given to "make up." Should an alarm be given from any box while a portion of the department is engaged at a fire, the apparatus not in service will respond.

REPORT

OF THE

CHIEF OF POLICE.

To the Honorable Mayor and City Council:—

GENTLEMEN:—In compliance with the City Ordinance I have the honor to present my annual report of the work of the Police Department for the year ending Nov. 30, 1886.

Whole number of arrests		1,703
Males	1,540	
Females	163	
Adults	1,274	
Minors	429	

Causes of Arrest.

Assault and battery	242
Assault—Felonious	8
Assault on Officer	2
Attempt to rescue prisoners	2
Arson	1
Adultery	4
Adulterated milk	6
Adulterated butter	2
Breaking and entering	48
Bastardy	8
Concealing leased property	1
Common drunkard	2
Common railer and brawler	1
Cruelty to animals	4
Carrying concealed weapons	1
Capias	4
Disturbing the public peace	68
Disturbing a public meeting	10
Delirium tremens	2
Default warrants	1
Drunkenness	716
Embezzlement	3
Escaped prisoners	6
Exposure of person	1
Amount carried forward	1143

Amount brought forward	1143
Evading car fare	1
Fast driving	3
Fornication	3
False pretences	8
Idle and disorderly	10
Insane	11
Keeping disorderly house	2
Keeping unlicensed dog	7
Liquor nuisance	4
Larceny from building	1
Larceny, simple	164
Lewd and lascivious persons	1
Manslaughter	1
Malicious mischief	40
Nuisance, common	1
Non-support of minor children	5
Non-support	16
Neglected children	2
Playing cards on the Lord's day	13
Peddling without a license	12
Receiving stolen property	2
Robbery	3
Robbery, highway	1
Safe keeping	10
Stubborn children	9
Suspicious persons	23
Surety of the peace	9
Stealing a ride	4
Truants	9
Vagrancy	35
Violation City Ordinances	77
Violation of the Lord's day	1
Violation of the liquor law	32
Wilful trespass	39
Using profane language	1
Whole number of arrests	1,703

Whole number of lodgers		1,078
Males	1,035	
Females	43	
Adults	1,016	
Minors	62	

Miscellaneous Business.

Accidents reported	90
Buildings found open and secured	268
Cases investigated	771
Dangerous buildings	13
Dangerous chimneys	4
Dead bodies found	8

Defective cesspools	38
Defective drains and vaults	30
Defective gas-pipes	2
Defective hydrants	11
Defective streets and sidewalks	762
Defective water pipes	50
Defective lamps	9
Defective fire alarm and clocks	3
Disturbances suppressed	373
Dogs killed	40

Miscellaneous.

Extra duty done by officers (days)	275
Fire alarms given by officers	17
Fires extinguished without alarm	30
Intoxicated persons helped home	43
Lost children restored	189
Sick and injured persons assisted	27
Stray teams put up	64
Street obstructions removed	20
Water running to waste	51
Value of property reported stolen	$5,207 84
Value of property reported recovered	6,003 01

City Property in Use by Police Department.

75 badges	$100 00
80 billies (short)	50 00
18 buckets	9 00
130 billies and belts	233 20
2 bookcases	12 00
4 bedsteads	12 00
Bedding and blankets	30 00
8 books	26 00
2 brooms	50
2 bureaus	3 00
1 buggy	100 00
8 clocks	40 00
50 chairs	50 00
2 coal-hods	1 00
4 carpets	125 00
1 copying machine	8 00
8 desks	180 00
3 dust-pans	50
2 horses	250 00
2 sets of harnesses	40 00
2 horse blankets	6 00
13 pairs of handcuffs	35 00
1 hat rack	50
1 ice hatchet and tongs	1 00
Amount carried forward	$1,312 70

Amount brought forward	$1,312 70
2 halters	1 00
2 straps and weights	1 00
3 thermometers	75
3 washbowls	75
20 lanterns	20 00
5 lounges	30 00
1 letter scale	75
2 lamps	1 00
8 mirrors	14 00
5 mats	5 00
3 maps	1 00
6 oil cans	1 50
10 pistols	15 00
1 police van	200 00
1 pair of runners	6 00
Ropes and stakes	25 00
3 robes	3 00
Rogues' gallery	150 00
6 slates	1 00
16 spittoons	4 00
1 sleigh	10 00
4 stretchers	6 00
3 saddles	15 00
1 safe	200 00
2 stoves	20 00
Telephone line	300 00
30 tin dippers	3 00
16 towels	3 00
8 tables	24 00
3 umbrella stands	2 00
6 waste baskets	2 00
4 water coolers	4 00
4 water pails	1 00
1 wagon	30 00
1 wagon jack	1 00
1 wardrobe	10 00
Total	$2,424 45

Total Cost of the Department for the Year.

Appropriation and estimated revenue	$80,467 25

EXPENDITURES.

Buttons and straps	$21 25
Books for the police department	69 87
Belts (W. J. Murphy)	133 00
Billies (F. L. Goldsmith)	46 20
Boarding horses	564 00
Base for Rogues' gallery	20 00
Amount carried forward	$854 32

Amount brought forward	$854 32
Carriage hire	47 10
Cambridge Gas Light Co.	436 61
Cambridge Water Board	41 00
Cambridge R. R. Co.	12 00
Cleaning stations 3 and 5	131 19
Clerical services on Rogues' gallery	22 50
Dr. Cowles to examining Officer Murphy	35 00
Directories for police department	12 50
Express bills	3 62
Medical attendance	25 00
Medicines	8 28
Mitchell, A. W. (for badges)	10 50
New England Telephone Co.	107 25
Photographs	42 95
Printing	23 00
Policemen, services of	76,057 95
Repairs on wagons	52 48
Repairs on harness	3 85
Repairs on stations	373 56
Supplies for stations	384 67
Shoeing horses	49 69
Salary of L. J. Cloyes, (chief of police)	$1600 00
Travelling expenses	50 60
Incidentals	18 82
Expenditures	$80,404 44
Receipts	6,292 00
Balance showing actual cost	$74,112 44

The organization of the force consists of a chief, three captains, nine sergeants and sixty-three patrolmen. Two sergeants and fourteen patrolmen are on duty in the day time, including one patrolman who has charge of Station Five; one sergeant is detailed as inspector; during the night time there are seven sergeants and forty-nine patrolmen on duty; one as house sergeant at Station One; six as patrol sergeants, two in each police district; a sergeant with each relief, three patrolmen as house officers and forty-six officers divided into two reliefs.

It is very gratifying to me to be able to state that the discipline of the force has never been better since its organization.

I would recommend an increase of the force of ten men. We are far behind other cities in the number of men allowed, notwithstanding the increase in population, and also the amount of work we are called upon to perform.

I would also recommend the new police signal system. With this system, and the increase of force as recommended, I feel that we should have a very efficient police force, and our city would be as well protected as any city in the Commonwealth. In connection with this system a wagon called the Patrol Wagon, provided with stretchers, splint, surgical appliances, etc., to be used in case of accidents, stands at the station house ready for instant dispatch to any point where its presence is necessary. This wagon carries several police officers, and whenever a policeman makes an arrest, or is in need of assistance, or wants an ambulance, he signals for this wagon, and when it reaches him, the arrested or wounded person or persons, as the case may be, are turned over to the officers in the wagon, who then drive back to the station house or to the hospital as the occasion requires.

During the past year there have been several changes in the department. Five officers have resigned and two have been discharged for cause.

A determined effort has been made to suppress the illegal sale of intoxicating liquors. During the year we have procured search warrants and searched twenty-seven places, and have also prosecuted thirty-six persons for violations of the liquor law, and sixteen liquor licenses have been revoked for violations of the conditions of their licenses.

It is very gratifying to me and I point with a great deal of pride to the workings of the police department of the past year. The amount of property reported stolen was $5,207.84; the amount of property recovered was $6,003.01; this is something unparalleled with the history of the police force of this city.

In submitting my report I desire to tender my thanks to His Honor Mayor Russell, and to you, gentlemen of the City Council, and especially to thank the gentlemen comprising the Committee on Police. Also His Honor Judge Orcutt, Mr. Justin A. Jacobs, City Clerk, City Solicitor Charles J. McIntire, District Attorney Wm. B. Stevens and Assistant District Attorney Cooney for their counsel and friendly advice, to whom I feel under great obligations, and also the members of the force for the prompt and efficient manner in which they have discharged the duties of their office. In closing I have simply to say that I

have endeavored to discharge the duties of the office faithfully, economically and impartially. I have the honor to be, gentlemen,

Your obedient servant,

LOTHROP J. CLOYES,

Chief of Police.

REPORT

OF THE

PROBATION OFFICER.

OFFICE OF PROBATION OFFICER, CITY BUILDING
Brattle Square, Cambridge, Nov. 30, 1886.

To His Honor the Mayor and the Board of Aldermen:—

GENTLEMEN:—The undersigned most respectfully submits his second annual report as probation officer for the year ending Nov. 30, 1886.

Probation Work During the Year.

Number of persons in care Nov. 30, 1885	18
Number placed on probation since	96
Number released from the Massachusetts Reformatory and placed in my care	3
Whole number in care	117
Number of cases investigated and recorded	1,410
Number of persons released from the House of Correction on my recommendation	3

Results.

Done well and cases laid on file	73
Enlisted in army	1
Did not improve and were sentenced	8
Left the city to escape sentence	6
Permit from Mass. Reformatory expired and person released for good conduct	1
Permit revoked and person sent back to serve sentence	1
Remaining in care on permit	1
Remaining in care on probation	26
	117

Ages of Probationers.

Under 15 years	8
15 and under 25	43
25 and under 35	27
35 and under 45	15
45 and over	3
	96

Males	89
Females	7
	96
Married	38
Single	58
	96

In the families of the thirty-eight married persons taken on probation, there were eighty children partly or wholly dependent on them for support.

Nativity.

Born in Cambridge	26
Born in other parts of the United States	27
Born in Ireland	24
Born in Prince Edward Island	6
Born in New Brunswick	5
Born in Nova Scotia	3
Born in England	2
Born in Scotland	2
Born in Prussia	1
	96

Nature of Offences.

Assault and battery	7
Breaking and entering	7
Disturbing the peace	3
Drunkenness (first offence)	49
Drunkenness (second offence)	13
Idle and disorderly	1
Larceny	7
Non-support of minor children	4
Stubborn and disobedient	1
Violation of city ordinances	1
Violation of Sunday law	3
	96

The seven cases of breaking and entering were committed by boys, 1 eleven years of age, 1 twelve, two fourteen and 3 fifteen.

Other boys associated with them in the same offences, but more hardened, and apparently incorrigible, were sentenced to the Lyman School for boys during their minority, or to the Massachusetts Reformatory at Concord according to their several ages.

During the year there have been 89 convictions for the crime of larceny in Cambridge. 34 of these were adults. Of the others

1 was twenty years of age, 5 nineteen, 5 eighteen, 6 seventeen, 5 sixteen, 8 fourteen, 7 thirteen, 6 twelve, 8 eleven and 4 nine.

During the same time there were 34 convictions for breaking and entering buildings with intent to commit larceny. Of these 6 were adults, 2 eighteen years of age, 2 seventeen, 1 sixteen, 6 fifteen, 4 fourteen, 2 thirteen, 4 twelve, 6 eleven and 1 ten.

In making recommendations for probation, I have endeavored to keep within the intent of the law, by favoring only such persons as I believed would honestly endeavor to lead better lives; and have been careful to guard against the mistake of helping those who are hardened and vicious, to escape punishment, again to become violators of the law, and dangerous to the public peace and safety.

Drunkenness is the cause of a large proportion of the arrests made in Cambridge. But there is another growing evil that demands the serious thought of parents and guardians, and that is, the increase of crime among minors, which is truly alarming. Of the eighty-nine convictions for larceny, and the thirty-four for breaking and entering during the year, 55 of the former and 28 of the latter were minors and nearly all of them were under seventeen years of age.

Some of the parents who have allowed their boys to roam the streets in the evening hours, with no efforts to keep them from evil associates, have suddenly been brought to realize that they had committed offences, which had they been committed by adults, would probably have resulted in their imprisonment in the State Prison. The responsibility of parents and guardians in the matter is evident.

It is with satisfaction that I review the work of the year, resulting in so large a per cent. of those under my care that have reformed and are now living better lives.

The question may be asked, is the reformation permanent? I believe that in many instances it is. As far as I could, I have kept sight of all those on probation, that have been placed on file since my appointment, and seldom has one been again convicted of any offence against the law.

Respectfully submitted,

FREDERICK W. HAGAR,

Probation Officer.

REPORT

OF THE

BOARD OF HEALTH.

To the Honorable City Council of the City of Cambridge:—

In compliance with the public statutes directing boards of health to make report in the month of January of the work of such boards done in the preceding year, we herein submit to your honorable body the details of the work for the year ending December 31, 1886.

We also submit for your careful consideration such recommendations as in our judgment the sanitary interests of the city demand.

The following list shows the number and nature of nuisances investigated.

Full and offensive privy-vaults and cesspools	476
Open, defective, broken and leaky privy-vaults	169
Filthy and defective privies	193
Offensive defective water-closets	117
Swill and garbage thrown into privy-vaults	27
Sluice water-closets	27
Privies on or near line	16
No proper privy-vaults	17
Defective cesspools	32
Defective drainage	338
No traps under sinks	238
Leaky and defective traps	61
Leaky defective sinks and bowls	66
Filthy and dirty yards	89
Swill, filth, ashes and garbage in cellars	53
Filthy stables and sheds	63
Manure in yards	56
Wet and damp cellars	52
Stagnant water on premises	47
Cases of glanders in horses	3
Swine kept on premises	11
Miscellaneous	67
Total	2,218

Beside the visits, examinations and inspections made by the health officer, the following is a list of work performed during the year.

Number of visits by Inspector		2,154
Number of second visits		823
Number of notices issued		889
Number of second notices issued		52
Number of special notices issued		132
Number of copies of regulations sent out		218
Number of letters written		62
Orders of the board served by constable		14
Premises ordered vacated		4
Cases brought before District Court		4
Complaints received and investigated :—		
Complaints sustained	347	
Complaints not sustained	12	
		359
Vaccinations and re-vaccinations		86
Premises fumigated		56
Vaults and drains disinfected		177

During the month of April the attention of the board was called to the defective and imperfect drainage of Marsh Court. The condition of things in this court has been called to our attention in former years, and recommendations in relation to the matter have been repeatedly made in the Annual Reports. In response to complaints the board visited the place, when they found the sewage oozing from the ground in several places, and the house drainage of two or three large tenements obstructed. As a better system of drainage was absolutely necessary to permanently relieve the condition of things, and as the nuisance was the result of the want of such a system, it did not seem fair or just to hold the house owners responsible. Therefore the following communication was sent to the City Council. Voted :—

"That the attention of the Board of Aldermen be called to the imperfect drainage of the district comprising Marsh Court and vicinity, and to the fact that the present system of public drainage is entirely insufficient to drain the district properly, and relieve the houses situated therein and the soil underneath."

The health officer reported from time to time that nothing had been done by the City authorities to relieve the condition of things above described, and in July this court was visited again by the board when it was found in even a more filthy and unsanitary

condition than at the previous visit. There were small pools of sewage matter on the ground, and two or three of the cellars were filled with water in which pieces of solid material were floating. It was then voted:—

"To issue a notice to each of the occupants of said tenements, setting forth the fact that the board had duly informed the Board of Aldermen on the 28th day of April last, of the necessity then existing, for immediate action for the relief of this district, and stating, that so far as the board had any knowledge, no action looking to the immediate relief of the district has been taken. To state further, that by reason of such non-action certain of the tenements in Marsh Court have become in such condition as to be dangerous to the health of the occupants thereof and the public, and to render them absolutely unfit for human habitation," and it is further ordered:—

"That the occupants of the tenements in said Marsh Court owned by Patrick Conroy, and the occupants of the tenements in said court, owned by Patrick Shea, be severally notified that said tenements have become by reason of imperfect drainage unfit for occupation, and a cause of nuisance and sickness to the occupants and the public, and that said occupants be required to quit the premises within ten days from the date of notice."

After a very few days the construction of a sewer was commenced and rapidly pushed to completion, and the nuisance that has existed here for years and has been a constant source of annoyance and complaint to the board, has been abated.

The district just above this in the vicinity of Sparks Street and above, is in something the same condition that Marsh Court was before the building of the sewer. Pools of water are scattered about over the surface, except in the very dryest weather, and the sewage either soaks into the ground or flows in old, defective, poorly constructed drains. The necessity for some measure to improve the drainage of this district is pressing. As the best means of relief, we would recommend that the Sparks Street sewer be rebuilt as has been recommended by the City Engineer. This will not only relieve the district referred to, but will do away with any possible necessity for any private system of sewers, such as was granted to Mr. Hubbard a few weeks ago by the City Council, to drain lands bordering on Sparks Street in this immediate vicinity.

As the City Council is aware, a sewer is now being constructed through Mount Auburn Street, to Auburn Place, intended to relieve the Belmont District. This sewer was greatly needed, and its construction has been repeatedly recommended by this board. By terminating it at Auburn Place it will afford relief to the lower part of the district it is intended to drain, still it will by no means accomplish all that is desirable in this direction. This board recommend that it be continued so as to give complete relief to the whole of the Belmont District. The only outlet for this drainage now is into Cider Mill pond by means of an open ditch; this pond has no outlet and it is dangerously near our water supply.

The sewer in Pioneer Avenue has been reconstructed and is now in good order. This has relieved the city from a dangerous and offensive nuisance and one that has been a constant source of complaint to the board.

Quite a number of other small sewers have been constructed during the year in accordance with our recommendation, that have contributed to the sanitary improvement of the city. During the summer months, applications are made almost weekly to the board or the health officer for recommendations for these small sewers in different parts of the city. As a rule the board has endorsed such applications, believing that it is wise policy for the city to be liberal in this direction even where only a few houses are to be accommodated.

We again call the attention of your honorable body to the outrageously sickening, filthy and dangerous condition of the Bridge Street sewer outlet. Heretofore the existing condition of things has been almost unbearable, now it is getting to be quite so. Before this year when the tide water was three or more feet deep in the vicinity of the sewer outlet, the gases resulting from the decomposition of filth were largely absorbed, but now they can be seen bubbling up through the water in places at nearly high tide, and when the tide is at the point of one-half ebb or flow these gases can be seen by the bubbling they create escaping into the air everywhere within two hundred or more feet from the outlet of the sewer. This gas at times, and in places where the water is three or four feet deep throws up hundreds of pounds of black stinking material that colors the water often within an area of thirty or forty feet in circumference.

Such a phenomenon can be seen almost any summer day by one who will take the trouble to observe for a short time the surface of the water near the Cambridge end of Craigie Bridge. This gas is offensive almost beyond description, and is a source of annoyance and we believe of danger to those living or employed in the vicinity, and it is certainly disgusting to everyone crossing the bridge. This condition of things has been relieved more or less by the dredging that has been done each spring for the last three years, but the relief from this source seems to grow less and less each year, and now such a measure is wholly inadequate to relieve the nuisance. In relation to this matter we would most respectfully recommend that an inquiry be made as to the cause of the nuisance, and that the authorities of the City of Somerville be invited to coöperate.

First. If it is wholly due to the sewage from the Bridge Street sewer.

Second. What particular estates in Cambridge or Somerville contribute the whole or a chief part of the sewage matter causing the nuisance.

Third. What remedies may be applied to lessen the quantity by removing the solid matter in suspension in such sewage, or otherwise, to correct the evil.

Fourth. Whether or not the annual dredging at the outlet will be necessary this year.

Fifth. What relief the intercepting sewer and pumping works proposed by the Metropolitan Sewage Commission will afford.

Sixth. That the City Engineer under the direction of the Board of Health be charged with this inquiry.

The cow stables in the city continue to be a source of serious nuisance and complaint. For information in relation to this matter and the recommendation made by us for measures of relief we refer you to our reports of the two preceding years.

In April, the following regulations in relation to stables and manure were adopted by the board and a copy was sent to all stable-keepers as well as to those keeping cows:

CITY OF CAMBRIDGE.
OFFICE OF BOARD OF HEALTH,
CITY HALL, April 23, 1886.

Regulations in Relation to Stables and Manure,

1. The owners and occupants of livery and other stables within the city shall not wash or clean their carriages or horses, or cause them to be washed or cleaned in the streets or public ways. They shall keep their stables and yards clean and not allow large quantities of manure to accumulate or remain in or near the same, at any one time between the first day of May and the first day of November, and no manure shall be allowed to accumulate or remain uncovered outside of the stable building.

2. Cow manure shall not be stored or kept otherwise than in stable or barn cellars, such cellars to be properly drained, and in no case can more than one cord be allowed to accumulate. Manure shall at no time be loaded upon or across any passage-way or sidewalk, except when it is impossible to load it otherwise, and in such cases great care shall be used to prevent it from dropping upon such passage-way or sidewalk. In all cases it shall be removed in a tight canvas-covered vehicle, with the covering at all times so secured to the sides and ends of the vehicle, while moving a load within the city limits, as actually to prevent the contents from dropping.

By order of the Board of Health,

Attest: JOHN MCDUFFIE,
Clerk.

During the last part of the year serious complaints were made of the sanitary condition of the Webster school-house by citizens having children attending the school. In response to these, careful inquiry was made into the matter by the health officer and a member of the board. No defect was found to exist that in the opinion of the board endangered the health of the children attending the school, provided the sluice vaults in the basement were constantly cared for, yet a neglect to do this, might, and probably would result in a serious and annoying nuisance. We believe that such a system of house drainage as this (sluice vaults in the basements), that require such constant and unremitting care to protect the health of the occupants, is an entirely improper one for a public building containing eight hundred children, and that it should be removed and replaced by some more modern and better system. We cannot help expressing our surprise that the City Council did not, when the new part of

the building was built last year, supplied with a most excellent system of drainage, think it absolutely necessary, in order to comply with the present demands of sanitary science to remove these vaults and substitute a system like that in the new part. Certainly it is neither wisdom nor according to the dictates of ordinary sanitary demands to introduce a perfect system of drainage in one part of of a building, and to leave an antiquated and seriously objectionable system in the other.

We renew our recommendation of former years that all the privy-vaults attached not only to the school-houses but the public buildings be replaced by some approved form of water-closets. We would also call attention to the water-closets in City building, Brattle Square. The very offensive odor arising from some of these, even when not in use is disgusting in the extreme, and measures should at once be taken to abate this nuisance, particularly as large numbers of people congregate in and about the Court room and remain there for hours.

During the early spring a number of complaints were made to the board of the offensive smell of Fresh Pond water drawn from the faucets. Samples of the water were analysed, taken from the Pond and one from the main at City Hall, these analyses showing nothing unusual. The Health Officer investigated this matter, but as the odor ceased in a short time it was not determined just what was the cause of it. The Pond was filled up quite full by a freshet late in the winter, but during the summer and fall it became very low again. We are not able to state just what its qualities have been for the last year, as determined by analysis, for such examinations have not been made by the Water Board, except on two occasions when especially requested by this board. We think this is particularly unfortunate, because such analyses would have been of importance and value by way of comparison with the water from Stony Brook with which the Pond is to be filled up hereafter.

Early in October a number of cases of diphtheria occurred in the district north of Cambridge Street, bounded by Willow Street, Somerville line and Carson Street. As the number steadily increased, and as this district from a sanitary point of view is decidedly one of the worst in the City, it caused the Board some uneasiness, and it was deemed advisable to take some active and definite measures to prevent the spread of the disease. The

houses where the disease existed were repeatedly visited and inspected by the Health Officer and inspector, and wherever a case occurred they were thoroughly fumigated. All rubbish and filth in the yards and out-houses was removed, and suspicious places disinfected with a solution of bi-chloride of mercury or chloride of lime. Every vault was disinfected with one pound of sulphate of copper, and four ounces of bi-chloride of mercury in solution, and the floors and seats washed with the same solution where necessary; large vaults being treated with a double quantity. The sinks and drains in these houses where the disease existed were treated with a liberal and strong solution of the bi-chloride of mercury, as well as defective drains in other houses in the district. This work was completed December 2d, and no case has been reported from that district since.

November 18th quite an outbreak of typhoid fever appeared, and between that date and the 30th, about 50 cases occurred. An investigation was commenced by the Health Officer to determine its cause. Samples of Fresh Pond water were analysed that showed the water in a poorer condition than it had been perhaps ever before, but owing to the fact that almost all of these cases were confined to a certain part of the City, it was not thought probable that this had anything to do with the outbreak, and also from the fact that it virtually ceased in a few days. It came to the knowledge of the inspector that three or four families in which three or four cases had occurred in each, were taking milk from the same milkman. Investigation showed that with 5 or 6 exceptions all of these cases that occurred within these 10 or 12 days, occurred in families taking milk from this one milkman. In the Kindergarten school, corner of Harvard and Moore Streets, of about 30 scholars, 10 scholars, 2 teachers and a servant girl had the disease, the ten children being those who remained at school at the noon hour and were fed with milk every day. The two teachers and the servant girl also were in the habit of drinking daily quantities of the milk. These facts demonstrate that this milk was probably the cause of this outbreak of the fever. The State Board of Health was consulted, and kindly consented to send a man to the farms in New Hampshire where the milk was produced, to determine if any cases of typhoid fever had occurred there. It was learned that in September of this year

a case of this disease had occurred in one of the farm houses, and remained there during the sickness, also, that another party was taken with the disease here, but after a few days' sickness, was removed. The stools from these patients were thrown into a leaky defective privy-vault and the well, the water supply of the house, was only twelve feet distant.

It was further learned that a small part of the milk distributed by this milkman was furnished by a contractor who collects his milk in the towns of Acton, Littleton, Harvard and Boxboro, but unfortunately, this contractor could not inform us, as the one furnishing the greater part of the milk had done, from what farms this milk came, and so far we have only been able to learn that there was typhoid fever in one of the farm houses where he got milk.

This investigation is not completed, yet we have sufficient facts to lead us to believe that this milk was the cause of the outbreak, and that undoubtedly it became infected at the farm where these two cases occurred. So far as we know, no well authenticated outbreak of typhoid fever has ever before been traced to a milk supply in this country, although this has repeatedly been the case abroad. Dr. Budd in his work on typhoid fever, reports an ontbreak in the city of London of nearly 300 cases that were traced to the milk furnished by one milk farm. About six weeks before, a case of typhoid fever had proved fatal in that farm-house and the stools from the patient had been thrown into a leaky vault that was situated about 30 feet from the well; the water from this well was used to wash the milk cans.

During the summer repeated complaints were made of the offensive odor coming from the rendering establishment of Dow, Davis & Co., on Portland Street. As a hearing had been had in relation to this matter the year before in response to a petition and complaint coming from more than one hundred citizens, it was thought best to proceed against them in the courts. The Health Officer was directed to make a complaint against the firm for creating and maintaining a nuisance. They were tried and convicted, but appealed to the higher court and the case is now pending.

We respectfully call the attention of your honorable body to the number of cases of scarlet fever, diphtheria, and typhoid fever, tabulated and appended to this report. The total of these diseases is 596 against a total of 672 in 1885, and 810 in 1884,

a decrease of nearly a hundred from last year in spite of the epidemic of typhoid fever which increased the total a little more than fifty in number. This decrease has been wholly in scarlet fever, the number of cases of diphtheria remaining about the same.

We also call your attention to the tabulated report of the number of deaths occurring in the city during the year, herewith appended. The total is 1,190 against 1,316 last year, a decrease of 126 notwithstanding the large increase in population.

We would respectfully call the attention of your honorable body to the fact that all of the work done by the board, as indicated by the special enumeration of matters in the first of this report, and much other not especially worthy of notice, has been accomplished for the small sum of $2,788.70.

At a regular meeting of the board November 30, 1886, the chairman informed the members present, that he had received a letter from George F. Piper, Esq., stating that he had written to the Mayor submitting his resignation as a member of this board.

It was therefore ordered, that the clerk be instructed to prepare and send to the Board of Mayor and Aldermen a communication, expressing the opinion of the board in reference to the matter.

In accordance with the above the following notice was prepared and forwarded:

CITY OF CAMBRIDGE.
OFFICE OF THE BOARD OF HEALTH,
CITY HALL, December 6, 1886.

To the Honorable the Mayor and Aldermen of the City of Cambridge:—

GENTLEMEN:—This board having been informed of the resignation of George F. Piper, Esq., one of its members since its organization in 1878, has voted:—

That this board has learned with deep regret of the resignation of George F. Piper, one of its members, and it desires to signify its hearty appreciation of the many valuable and unpaid services he has so freely given toward the promotion of the important sanitary work committed to its charge.

His careful study of the serious questions of law which have frequently arisen during his connection with the Board, and his

knowledge upon many legal points bearing upon its work, upon which judicial decisions have been rendered, have made his association at its councils of the highest usefulness.

By direction of the Board of Health,

JOHN MCDUFFIE.

Clerk.

The vacancy occasioned by the resignation of Mr. Piper was filled by the appointment of William H. Whitney, Esq.

Respectfully submitted,

DANIEL H. THURSTON,
H. P. WOLCOTT,
WM. H. WHITNEY.
} *Board of Health.*

OFFICE OF THE BOARD OF HEALTH, CITY HALL,
CAMBRIDGE, Dec. 29, 1886.

To the Honorable City Council:—

GENTLEMEN:—The annual statement of the expenses of this board, for the year 1886, is herewith submitted.

The appropriation made for the Health Department was	$3,000 00

The expenses incurred were as follows:—

Advertising	$6 00
Analysis of water	5 00
Burying animals	29 25
Car-tickets	55 00
Circulars	2 00
Cow-pox points	7 65
Directory	2 50
Disinfectants	50 45
Fare of Health Officer to Toronto, attendance at Health Conference	18 00
Hand-stamp	3 50
Printing	23 70
Removing one load weight soil	4 00
Salary of Health Officer	1,500 00
Salary of Inspector	900 00
Salary of Clerk of Board	150 00
Stationery	31 65
	$2,788 70
Balance unexpended	$211 30

By direction of the Board of Health,

JOHN McDUFFIE,
Clerk.

APPENDIX.

Causes of Death in 1886.

ARRANGED ALPHABETICALLY.

Diseases.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Alcoholism	....	....	2	....	1	....	1	2	1	....	....	....	7
Anæmia	....	...	....	1	....	1	....	....	....	....	....	....	2
Apoplexy	4	2	....	2	3	2	....	....	2	....	2	2	19
Asthma	1	....	....	....	1	....	....	....	....	....	....	1	3
Atrophy and Debility	1	1	1	1	3	1	7	6	2	3	5	2	33
Brain diseases	2	4	1	1	2	....	....	1	4	1	....	4	20
Bright's disease	1	3	3	3	2	....	2	....	1	1	2	1	19
Bronchitis	3	2	3	5	1	3	2	2	4	3	2	7	37
Burns and Scalds	....	....	....	....	....	....	....	....	....	....	....	3	3
Cancer	3	1	8	1	1	5	6	5	2	2	9	2	45
Cellulitis	1	....	1	....	....	1	1	....	....	....	1	....	5
Cerebro-Spinal Meningitis	....	....	...	....	....	....	....	...	1	....	....	....	1
Childbirth	....	....	....	....	....	....	....	....	....	1	....	....	1
Cholera Infantum	....	....	....	....	....	3	25	27	25	3	....	....	83
Cholera Morbus	....	....	....	....	....	....	1	....	....	....	....	.. .	1
Convulsions	1	2	2	3	1	3	2	1	4	3	1	....	23
Croup	1	1	1	3	2	2	....	1	....	....	2	1	14
Cyanosis	....	1	....	....	....	2	....	....	....	2	1	2	8
Cystitis	....	1	....	...	....	....	1	....	....	....	....	....	2
Diabetis	1	....	1	1	....	1	....	....	...	....	....	....	4
Dysentery	1	....	....	....	....	....	1	2	....	....	....	....	4
Diarrhœa	1	1	....	....	....	....	....	1	....	....	1	....	4
Diphtheria	4	5	2	3	6	8	5	4	5	8	9	11	70
Disease of Hip	....	...	....	....	....	1	....	....	....	....	....	....	1
Dropsy	....	....	....	....	1	....	...	....	....	....	1	....	2
Drowning	....	....	1	1	....	1	1	1	....	....	....	1	6
Enteritis	....	....	1	2	1	....	1	1	1	1	....	1	9
Epilepsy	....	....	1	....	....	....	1	....	....	....	....	....	2

Causes of Death in 1886.—Continued.

Diseases.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Erysipelas	1	1	....	1	1	1	....	....	....	1	....	....	6
Fever, Scarlet	2	1	1	....	....	....	2	....	....	....	....	....	6
Fever, Typhoid	....	1	2	....	....	1	....	....	2	1	5	9	21
Gastritis	....	....	1	....	1	....	2	1	....	....	....	1	6
Heart disease	4	4	15	3	8	8	2	5	3	6	4	11	73
Hemorrhage from Bowels	....	....	....	....	....	....	....	1	....	....	....	....	1
Hydrocephalus	....	....	....	....	....	...	....	1	....	....	1	1	3
Insanity	....	....	....	....	....	....	....	1	....	....	....	1	2
Jaundice	....	....	....	....	....	....	....	....	....	1	....	....	1
Kidney disease	2	....	....	....	....	....	....	....	....	....	1	....	3
Liver disease	....	2	3	1	1	1	....	....	2	1	1	....	12
Leucocythæmia	....	....	....	....	....	....	1	....	....	....	....	....	1
Lung diseases	2	1	2	....	1	....	....	....	....	2	1	1	10
Measles	....	....	....	....	....	....	....	3	1	....	....	....	4
Meningitis	6	1	6	4	3	4	9	6	7	4	3	3	56
Metria	1	....	2	1	1	...	1	....	....	....	....	2	8
Murder	....	1	....	....	....	....	....	....	....	....	....	....	1
Nephritis	...	....	1	1	....	2	1	....	2	....	1	1	9
Occlusion of Intestines	....	2	....	....	....	....	....	....	1	....	2	....	5
Other Malformations	....	....	....	....	....	....	....	....	....	....	1	....	1
Old Age	2	3	5	1	2	1	....	2	....	1	....	4	21
Other Casualties	2	2	....	3	....	....	1	1	1	....	2	3	15
Paralysis	5	....	1	1	2	....	....	2	4	3	1	5	24
Peritonitis	1	....	....	1	3	....	....	....	1	3	4	....	13
Phthisis	18	12	18	26	17	11	15	15	10	12	16	17	187
Pleurisy	....	1	....	1	....	....	....	....	1	....	....	1	4
Pneumonia	11	7	18	7	12	1	5	1	2	7	13	8	92
Poison	....	....	....	1	....	....	....	....	.	....	1	1	4
Premature Birth and Infantile Debility	4	3	3	1	1	2	2	7	3	5	1	5	37
Rheumatism	2	1	....	1	1	....	1	....	....	....	....	1	7
Septicæmia	2	....	1	....	1	....	....	....	2	....	....	1	7
Spine concussion	1	....	....	...	....	....	..	....	....	...	....	....	1
Spinal disease	....	...	....	1	....	....	..	....	....	....	....	....	1
Spleen diseases	....	....	....	....	1	....	....	....	....	....	....	....	1

Causes of Death in 1886.—Continued.

Diseases.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Spasm of Glottis	2	....	....	....	....	....	....	....	....	....	....	....	2
Stillborn	6	3	6	9	5	4	6	7	4	10	8	4	72
Stomach disease	....	....	1	....	....	1	....	....	1	....	....	....	3
Suicide	....	1	....	....	....	1	....	....	1	....	....	....	3
Surgical Operation, air in veins	1	....	....	....	....	....	....	....	....	....	....	....	1
Scrofula	....	....	1	....	1	1	....	....	....	....	1	....	4
Syphillis	....	....	....	....	....	....	....	....	....	....	1	....	1
Tabes Mesenterica	1	....	....	....	....	...	....	....	....	....	....	....	1
Teething	....	....	....	....	1	....	....	....	....	....	....	....	1
Tumor	....	....	....	....	....	....	....	....	....	....	1	....	1
Umbilical Hemorrhage	....	....	1	....	1	....	....	....	....	....	....	....	2
Unknown	3	....	1	2	2	....	2	1	1	1	2	4	19
Whooping Cough	....	....	....	....	2	1	2	2	2	....	....	....	9
Totals	104	71	117	93	93	74	109	110	104	86	107	122	1190

Cases of Scarlet Fever, Diphtheria and Typhoid Fever, reported to the Board of Health for the Year 1886.

Name of Disease.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Scarlet Fever	42	30	50	22	22	14	12	8	4	10	11	4	229
Diphtheria	12	14	14	19	16	20	22	17	18	30	27	26	235
Typhoid Fever	2	3	5	1	....	2	3	12	12	12	47	33	132
Totals	56	47	69	42	38	36	37	37	34	52	85	63	596

REPORT

OF THE

SUPERINTENDENT OF LAMPS.

To the Honorable City Council of the City of Cambridge:—

THE undersigned respectfully submits his annual report as Superintendent of Lamps for the year ending Nov. 30, 1886.

The amount appropriated for lighting streets was $33,500.00.

The amount expended was as follows:—

For Gas	$18,958 59	
Care of lamps and lighting	8,930 89	
Posts and lanterns	908 75	
Repairs	403 21	
Labor, pipes and fittings, Gas Company	410 19	
Glass	291 00	
Alcohol	202 50	
Kerosene and matches	351 99	
Burners, chimneys and wicking	76 88	
Glass fonts	45 08	
Castings	16 58	
Sundries	10 65	
Ladders	7 00	
Carriage hire, Committee on Lamps	20 00	
Gas tools	10 25	
Testing gas burners	17 50	
Painting lamp posts and lanterns	227 40	
Curbing and labor, cluster lamp, Central Square	29 55	
Express	14 25	
Superintendent's salary	650 00	
	———	$31,582 26
Unexpended balance of appropriation	———	1,917 74
		$33,500 00

Cash collected for damages to posts and lanterns, and paid into city treasury $43.96, which deducted from the amount expended, leaves the actual cost of the department $31,538.30.

The cost per lamp for all expenses of the department was for the gas lamps $31\frac{32}{100}$ dollars yearly, and for the oil lamps $14.00.

The total number of street lamps now lighted by the city is 1,124, distributed as follows:—

District 1	123 gas,	33	kerosene	
" 2	136 "	27	"	
" 3	108 "	45	"	
" 4	159 "	10	"	
" 5	129 "	28	"	
" 6	140 "	23	"	
" 7	120 "	43	"	
	915	209	—	1,124

The increase for the current year, is 70, viz. 21 gas and 49 kerosene, of which number the petitioners have furnished $16\frac{1}{2}$ gas and 10 oil, and the city has furnished $4\frac{1}{2}$ gas and 39 oil. The lamps have been lighted 339 nights during the year, and the aggregate number of hours burned is 3,033,389, consuming 12,133,556 feet of gas, and averaging $9\frac{3}{4}$ hours each night, the lowest number of hours being 7, and the highest $13\frac{1}{4}$.

The cost per night, for each lamp, covering all expenses of the department, was, gas lamps $9\frac{1}{4}$ cents, oil lamps $4\frac{1}{6}$ cents.

The expenses of the department have been lessened by a reduction in the price of oil by which a saving has been made of about 125 dollars, and by a reduction in the price of gas. On the 19th of April last a contract was signed by the Gas Company and the committee on lamps to take effect on the 23d of March previous, by which the Gas Company agree to furnish gas for the street lamps at $1.50 per thousand feet, the former price being $1.65, and the reduction in expenses from this source, to Dec. 1, 1886, is $1,164.88. The following is the contract referred to :

This memorandum of an agreement entered into this twenty-third day of March, in the year eighteen hundred and eighty-six, by and between the city of Cambridge on the one part, hereinafter called the City, and the Cambridge Gas Light Company, a corporation duly established by law, hereinafter called the Company, of the other part, witnesseth, that

First, the said Company agrees to furnish all gas which may be required for lighting the public lamps within said City, which are, or may hereafter be located and continued on streets in which the said Company has, or may hereafter have mains, during the continuance of this contract, in such manner and during such hours as the Superintendent of Lamps, of said City, shall direct, provided that the said lamps shall be lighted all

night, every night, excepting forty-eight nights during the year, at or about the time of the full of the moon; but it is hereby understood that the City shall have the right, and may discontinue altogether, the use of any such lamps if they should deem it advisable to do so.

The Superintendent of Lamps shall furnish to said Company, each month, in advance, a schedule of the hours for lighting and extinguishing the lamps during the month.

The said Company agrees further to put down service pipes for all new lamps located by said City, at the expense of said City as hereinafter provided, viz: Said City will pay for all service pipes at the net cost,—plus ten per cent. for the use of the Company's team, twenty-five cents per hour shall be charged, and five cents per hour profit for each man employed in putting in such service pipes shall be allowed; no charge is to be made for the use of tools; and the said Company further agrees to furnish without charge, such quantity of alcohol as may be necessary to clean such service pipes from obstructions, not exceeding ninety (90) gallons in any one year.

To secure the correct measurement of the gas burned it is agreed that "glycerine burners" shall be used of the kind now used in the street lamps of the city, (the Gas Company paying one-half of the expense of such burners), and gauged to burn four cubic feet of gas per hour under the ordinary pressure of the Cambridge gas mains. The said burners are to be examined and inspected at the end of two years after being applied, and any of them may be removed for inspection at the request of either party before that time, and in case any of the said burners are found to vary more than one-tenth of a foot per hour, from four feet, under a pressure of two and eight-tenths inches of water, they shall be readjusted by said Company, so as to consume the proper quantity of gas; provided, that if it is found that two and eight-tenths inches is not the correct pressure, then they shall be adjusted to the correct pressure, and in case of any repairs being made upon the said burners, the Company agrees to pay half the expense of such repairs.

The City on its part agrees to pay each month to the said Company for the gas consumed during the previous month, at the rate of one dollar and fifty cents per thousand feet, provided, that if at any time during the continuance of this contract the

Company shall reduce its price for gas furnished to any of its consumers for illuminating purposes, to a less price than one dollar and fifty cents per thousand feet, then the price to be paid by the City shall be immediately changed and made as low as that paid by any consumer of gas who may be supplied by the said Company.

And the City further agrees to appoint and pay skilful and reliable men to light and extinguish the lamps, to keep the lanterns clean and the burners in good order. Each lighter shall make a written return each week to the said Company of the hours of lighting and extinguishing, and especially of any lighting during the time of the full of the moon; and at the end of each month each lighter shall make a return for the fraction of the week at the end of said month.

The lighters shall each keep the portion of the pipes in his district, which are above ground, free from frost and other obstructions, and shall give immediate notice at the office of the Company of any leakage, and shall also report the same to the Superintendent of Lamps, each lighter to be required to light and extinguish the lamps himself, and no substitute to be employed excepting by permission of the Superintendent of Lamps; the name and district of such lighter to be furnished to the Superintendent of said Company.

This agreement shall continue in force for three years from the twenty-third day of March, eighteen hundred and eighty-six, and until notice is given thereafter by either party of its desire to terminate the same.

In witness whereof the said City has caused this agreement to be signed by its committee, and the said Company has caused its seal to be affixed and attested by the signature of its president this nineteenth day of April, in the year eighteen hundred and eighty-six.

Signed:—The City of Cambridge, by

ISAAC S. PEAR,
EDW. W. HINCKS,
MICHAEL F. McGRATH,
FRANK H. TEELE,
PATRICK H. De COURCY,
} *Committee on Lamps.*

Signed:—Cambridge Gas Light Co., by

DANIEL U. CHAMBERLIN, *President.*

The City has also entered into a contract with the Cambridge Electric Light Company to furnish electric lights for certain streets at 55 cents per night each.

Said contract is as follows:—

"This agreement entered into this fifteenth day of December, Eighteen Hundred and Eighty-six, by and between the Cambridge Electric Light Company, a corporation duly established by law, having a place of business in the city of Cambridge and hereinafter to be called the Company, of the first part, and the City of Cambridge, a municipal corporation in the State of Massachusetts and hereinafter called the City, of the second part, witnesseth:

"First, that the said Company agrees to furnish electric lights, each to give not less than two thousand candle power, according to the standard measurement, in the streets and squares named in the order passed by the City Council at its regular meeting held December 1, Eighteen Hundred and Eighty-six, and under the conditions named in said order."

Said order is as follows:

In Board of Aldermen, December 1, Eighteen Hundred and Eighty-six. On the Report of the Committee on Lamps, ordered, that the Committee on Lamps be authorized to contract with the Cambridge Electric Light Company for lighting by means of electricity the several streets included in the routes hereinafter named at the rate of fifty-five (55) cents per light for each night upon which the said streets are so lighted, and for the period of one year from the date of the contract.

Provided the said Company shall receive from the Board of Aldermen the requisite locations for its poles in the streets named, and that said Company shall furnish poles upon which the lights are to be placed free of expense to the city, and that said poles shall be satisfactory to the Committee on Lamps. The distance between said lights not to exceed five hundred feet.

The expense incurred under authority of this order to be charged to the appropriation for Lighting Streets.

Locations.

West Boston Bridge to Harvard Square, through Main Street to Quincy Square, and thence to Harvard Square, Craigie Bridge to Harvard Square, through Bridge, Cambridge, Kirkland and Peabody Streets.

North Avenue from Harvard Square to the Lexington and Arlington Railroad.

Brattle Square and other squares connected with the routes hereinbefore named.

Provided further, that said Company shall furnish to the Board of Aldermen satisfactory evidence that it is financially responsible and can fully comply with the terms of this order.

The said lights to be located from time to time, and in such places as shall be designated by the Committee on Lamps of said City, and the said Company further agrees to keep the same lighted all night. on each and every night during the term of this contract, and during such hours as shall be designated and directed by the Superintendent of Lamps of said City.

Second, the said Company covenants and agrees to indemnify and save the said city harmless from any and all claims for damages for injury to persons and property arising from imperfect insulation of wires or improper or imperfect construction or maintenance; or from any use of its wires or apparatus, and from any and all claims for damages by reason of any infringement of patent rights, in the use of said lamps, lights, wires, poles, machinery or appliances connected therewith; and also from and on account of all decrees, judgment and orders of any court, or on account of said lights, wires, poles, lamps, machinery and appliances or the use of any of the same.

Third, the said City agrees that if the said Company shall well and faithfully perform the conditions of this contract, in all its parts, first satisfying said City that no liens or other claims for labor done, or materials furnished in the aforesaid work, exist, and that no proceedings either in law or in equity have been begun against it, or against said City on account of any infringement of patent rights or other wrongly or alleged wrongful use of said electric lights, wires, poles, lamps, machinery and appliances, then the said City will pay the said Company for each light so supplied, as aforesaid, and used by the

City, the sum of fifty-five (55) cents for the use thereof, every night, and the said price paid shall be in full payment for any and all expense attending the maintenance and use of such lights, whether the said lights shall be of two thousand candle power, or more, but it is hereby understood that if through accident, or from any other cause, the said lamps, or any portion of them shall fail to be so lighted upon any night or nights, or portions of a night or nights, during the continuance of this agreement, then such proportionate reduction from the sum to be paid, shall be made, as the said Committee on Lamps shall determine, such reduction not to be made until after due hearing of all the parties interested.

Fourth, this agreement shall continue in force for one year from the fifteenth day of December, Eighteen Hundred and Eighty-six, and until such time thereafter as either party to this contract shall give notice to the other, in writing, of its intention to discontinue the same, provided; that the service rendered by said Company as to the work done, the materials furnished, and the performance of the conditions of this contract shall be satisfactory to the Committee on Lamps, for the time being, of the City Council.

Fifth, the City hereby reserves the right which is agreed to by the said Company, that under the direction of said Committee on Lamps the Superintendent of Lamps may order an increase of the number of lights, or a change in any location of the same, from time to time whenever it deems such to be for the best interest of the City, any such increase to be made at the expense of the said Company, and no lights to be paid for except for the number of nights they are actually lighted.

Sixth, the said City agrees to pay said Company proper charges as aforesaid for the use of the said lights, in monthly instalments on the days fixed by the said City for the monthly payment of its bills.

Seventh, it is hereby understood and agreed that at the expiration of the time of this agreement, the said Company shall, if notified so to do by the City, remove the said lights, lamps, and the poles to which the same are attached, other than the poles which have been located for the suspension of their line of wires, all such to be done at the expense of said Company.

In witness whereof the said parties have hereunto set their hands and seals the day and year first before written.

Signed:—Cambridge Electric Light Co., by

ABEL C. WHITTIER, *President.*
ELISHA P. COLEMAN, *Treasurer.*

Signed:—The City of Cambridge, by

ISAAC S. PEAR,
EDW. W. HINCKS,
MICHAEL F. McGRATH,
FRANK H. TEELE,
} *Committee on Lamps.*

The adoption of electric lights on the streets named in the order of the City Council will result in the discontinuance of 155 gas lights, the discharge of two men from the force of lighters and the reconstruction of the lighting districts throughout the city.

The 70 electric lights to take the place of the gas lights displaced will cost the city in the aggregate $38.50 per night. The cost of the 155 gas lights discontinued has been $14.33¾ per night, covering all expenses of the department. The additional expense, therefore, by adopting the electric lights, will be $24.16¼ per night, and on the basis of burning the lights 339 nights in the year. The aggregate additional yearly expense will be $8,191.13¾ cents.

There seems to be little doubt that the electric light is to be generally employed for street lighting. It is managed from the central station and is free from some of the difficulties of illuminating by the use of gas, the collection of frost or water in the mains and the derangements of meters.

The increased amount of light is one of the great advantages. A policeman of this city said recently that, standing in Central Square he could see the figure of a person on Main street, at the Universalist church and could distinguish whether it was a man or a woman, and could see whether or not a bundle was carried under the arm.

In the matter of assistance to the police and for the better protection of property at night it would seem to be of great advantage.

Respectfully submitted,

BENJAMIN F. NOURSE,

Superintendent of Lamps.

REPORT

OF THE

INSPECTOR OF MILK AND VINEGAR.

To the Honorable the Mayor and City Council of Cambridge: —

GENTLEMEN: — I herewith submit my annual report as Inspector of Milk and Vinegar: —

In regard to the inspection of the milk supply the work has been conducted in the same manner as described in my last report; that is, pint samples are procured from the milk teams and stores throughout the city, and brought to the Laboratory for analysis. The method of analysis is the same as that described last year. Any dealers found selling milk below the standard are either warned or prosecuted, one or more warnings generally being sent before a prosecution is entered upon.

There have been collected during the year and submitted to analysis 731 samples of milk; 107 warnings have been sent to parties selling milk which fell below the standard, and 6 cases have been taken into court and convicted. Appeals have been taken in 2 cases, which still remain undecided. A comparison of these figures, with those of last year, shows an improvement in the quality of the milk sold.

The figures are as follows: —

Samples Collected.		Warnings sent.	
1885.	1886.	1885.	1886.
430	731	102	107

The ordinary adulteration of milk consists in the addition of water or the subtraction of cream, or both, and the subsequent toning up of the remaining milk with a little sugar, salt and coloring matter.

In one sample brought to me I found a large quantity of cotton-seed oil. In another so large an amount of coloring matter as to give the milk a bright yellow cover. Such cases are, however, unusual and probably accidental. It can be taken for granted that any sample of milk which does not look blue after skim-

ming has been colored and frequently skimmed and watered as well, and that any milk which does not turn sour after standing in a warm room for twenty-four or thirty-six hours has had borax or some such substance added to prevent it from souring, and yet people have repeatedly told me that they knew their milk was good because it did not turn sour, and seemed to have just as much body after as before skimming.

As I have before said, the poorest milk generally comes from stores, either because it is bought to sell cheaply, without regard to quality or because the cream is all turned off in selling the first few pints, so that one person will get a very rich and another a very poor milk from the same can. This could easily be remedied by making it obligatory for all stores to sell milk from a wide-mouth stone jar, dipping it out with a ladle. This would make it impossible to sell most of the cream to any one customer, and would necessitate a very small amount of additional trouble or expense for the storekeeper; in fact, this is done now in some stores, both in this city and in Boston, with very good results.

The money collected from milk licenses during the year has amounted to $120.50, and that collected from butterine licenses to $29.50, a license being required for the sale of any kind of imitation butter or cheese, according to a recent act of the Legislature.

In regard to the inspection of vinegar the work is carried on in the same manner as for the inspection of milk — pint samples are bought in the different stores throughout the city, submitted to analysis, and those persons found selling vinegar below the standard are warned or prosecuted. Since January, the date of my appointment, I have bought and analyzed 92 samples of so-called cider vinegar, of which 38 proved to be adulterated within the meaning of the statute; 2 cases have been prosecuted, both of which are still undecided.

The method of analysis is as follows: the legal standard for cider vinegar being an acidity equal to $4\frac{50}{100}$ per cent. of pure acetic acid, and a solid residue after evaporation over boiling water, equal to 2 per cent. of the vinegar by weight. Six c. c. of vinegar are measured into a glass beaker, one or two drops of an alcoholic solution of phenol-phthalein added, and then a solution of sodic hydrate of known strength added to the vinegar form a graduated burette,

until the acid is entirely neutralized, as shown by the phenolphthalein suddenly changing from a light yellow to a bright cherry color. To secure accurate results the sodic hydrate solution must be added, drop by drop, towards the last, shaking up the vinegar after each drop falls in.

To find the solid residue 5 c. c. of vinegar are run into a platinum dish, and the contents evaporated over a water-bath. On weighing, after evaporation, and subtracting the weight of the dish the per cent. of solids is easily calculated. This residue, when ignited in the flame of a Bunsen lamp, should give a nearly pure potash flame, and the ash should give an alkaline reaction. A neutral or acid reaction shows the presence of some mineral acid in the vinegar.

Pure cider vinegar should show only the slightest trace of sulphates and chlorides when tested with Baric nitrate and silver nitrate, and should give an immediate heavy precipitate with a solution of lead acetate. White wine vinegar and the various other imitation vinegars give with this last test either no precipitate for many hours, or only a slight cloudiness, and often when tested with Baric nitrate and silver nitrate give more than a trace of precipitate.

Of the $175.00 appropriated during the year for expenses in my department, $125.00 was for the purchase of instruments and necessary expenses in the laboratory; $50 was for the purchase of samples of milk and vinegar. The following table shows how this money has been spent and the amount still on hand: —

1 pair Trömner's scales, with weights	$50	00
6 platinum milk dishes	38	00
2 silver milk dishes	3	00
Water bath	4	00
Fesser's lactoscope	3	00
18 pint milk cans	1	50
2 milk baskets	1	00
Lead sealing press, with 500 seals and wires	10	00
500 white cotton bags for sealing samples	6	25
Chemicals and incidental expenses	5	35
Total	$122	10
Balance	$2	90

For pint samples of milk and vinegar	9	75
Balance	40	25

I beg to suggest that in order to make this department as efficient as it should be, a much larger number of samples should be collected during the year. I could easily analyze twice or three times the number I have examined this year, if so much of my time were not taken up in collecting the samples. The police have kindly collected a considerable number of samples of milk for me during the year, but I have nevertheless to depend largely on myself for milk samples, and entirely on myself for samples of vinegar, and as a matter of fact the mere collection of samples takes up considerably more than half of my time.

Respectfully,

F. A. DUNBAR, M. D.,

Inspector of Milk and Vinegar.

CAMBRIDGE, November 30, 1886.

REPORT

OF

THE SCHOOL COMMITTEE FOR 1886.

INTRODUCTORY NOTE.

It is the duty of the Superintendent of Schools "annually to make a report to the Committee, giving an account of the schools and making such suggestions as he may deem advisable." This year he has also been directed "to prepare the annual report of the Committee, and to present it to the Board for approval." In the discharge of this double duty, the Superintendent respectfully submits his report in two parts: the first, after it has received the approval of the Committee, to become the official report of the Board; and the second part, in connection with the first, to be the report of the Superintendent.

GENERAL REMARKS.

THE sum of $178,900.00 has been expended by the School Committee the past year in the maintenance of the public schools, and were there no statute requiring the Committee "annually to make a detailed report of the condition of the schools," it would be eminently proper that such a report should be made. The people have a right to know how their money is expended, and what results are secured by the expenditure. In making a report, however, it is not necessary to the understanding of the condition of the schools to speak of the work which goes on without change from year to year, except as we trust that there is constant improvement in the manner of doing it.

That which is new either in plan or in ways of doing, that which is important for future reference, should have place in these reports. Certain statistics, also, which become increasingly valuable when kept from year to year, should be included.

Teachers.

Probably in no previous year has the city lost the services of so many teachers of long and successful experience as during the year just closed. Among those who have resigned, there are 8 teachers whose average term of service is 23 years. Mr. Daniel Mansfield was master of the Washington Grammar School for 44 years, and Miss Mary F. Peirce, a teacher in the High School for 34 years. At the time of Mr. Mansfield's resignation he had been in service for a longer period than any other teacher ever connected with the public schools of Cambridge, except Elijah Corlett, and no other teacher ever taught in our High School so many years as Miss Peirce.

In accepting the resignations of these teachers the Committee adopted resolutions expressive of their high esteem for them personally, and their appreciation of the faithful services which they had rendered. The letters of resignation and the resolutions were spread upon the records; but to give them a more public place they are included in this report. They are as follows: —

Mr. Mansfield's letter of resignation and the resolutions, or report, adopted by the Committee: —

CAMBRIDGE, March 18, 1886.

TO THE SCHOOL COMMITTEE OF CAMBRIDGE: —

On the last day of February, 1842, the Hon. Joseph T. Buckingham, in his editorial room on Congress street, Boston, gave me a certificate which now lies before me, and of which the following is a copy: —

This certifies that we have examined Mr. Daniel Mansfield, and find him qualified to teach the Grammar School in Ward 1, Cambridge.

[Signed], J. W. PARKER,
JOS. T. BUCKINGHAM,
BENJAMIN RAND.

Boston, February 28, 1842.

One week later, viz. on the 7th of March, in the waiting-room of Willard's line of coaches, now the waiting-room of the Cambridge Railroad Company, in Harvard Square, in the presence of my predecessor, Mr. Buckingham put into my hands the keys of the school, and said to me, in the language of the King of Israel to Benhadad, the King of Syria: "Let not him that girdeth on his harness boast himself as he that putteth it off." A young man, not then twenty-three, an entire stranger in

Cambridge, with little experience or knowledge of the world, with only such education as I had been able to pick up at the district school, supplemented by two or three short terms at an academy, and with no special preparation for my work, it may be readily imagined that it was in no spirit of boasting I began my work on the 7th of March, 1842.

Since that, to me, memorable morning, the years have come and gone. Early manhood has passed into middle age, and middle age is fast verging into the "sere and yellow leaf." But as I look back upon my life's work and realize how far its results have fallen short of my endeavor, how little, indeed, I have accomplished compared with what I intended and hoped to do, I can truly say that I feel as little like boasting, now that I am about to lay off the harness, as when I first girded it on forty-four years ago.

Deeply grateful for the kind consideration I have received at the hands of your board, and of all the boards of School Committee, without exception, under whom I have served, I now respectfully notify you that I shall not be a candidate for reëlection at your meeting in June.

With sentiments of the highest regard I am, very truly,

Your obedient servant,

DANIEL MANSFIELD.

The resolutions, or report: —

"When a veteran teacher announces his intention of retiring from the service with which, for more than a generation, he has been connected, it is fitting that we, to whom the supervision of our schools is, at present, intrusted, should give expression to the high esteem in which he has been held by us and by our predecessors in office; that we should recognize the filial love and respect entertained for him by his pupils in long succession; the admiration with which he has been regarded by his associates, best qualified to judge his work and its results; and that, upon the termination of the faithful labors of forty-four years, we should officially and with emphasis pronounce the words "well done."

We feel that in the withdrawal of Daniel Mansfield the city of Cambridge will suffer no ordinary loss, and that his claim on its grateful remembrance is acknowledged and enduring.

He deserves honorable mention by us for the unhesitating loyalty with which he ever followed the recommendations of this Board, even when they did not accord in all respects with his own judgment; for his unflagging energy and fidelity when the novelty of his work had long since worn off; for his willingness to receive fresh ideas and to adopt improved methods, and for the fact that he well merited the good old-fashioned title of "Master."

We thank him for what he has done, and for what he has been in the Washington Grammar School, and in the community; for the instruction of his example.

May he long enjoy the reward which should attend continued and earnest well-doing,—universal regard and esteem without,—and within, the serene consciousness of duty thoroughly discharged."

Miss Peirce's letter of resignation, and the resolutions adopted by the Committee: —

WESTON, June 7, 1886.

TO THE SCHOOL COMMITTEE OF CAMBRIDGE :—

After considerable reflection I have decided not to become a candidate for reëlection in the High School. My health has been very much improved by my long vacation, but some bronchial difficulty remains ; and I feel that it would be unwise to incur the risk of more serious trouble. I hope to withdraw with a reasonable amount of health, so that life may still hold some pleasure for me, even after I have given up a work to which the greater part of my life has been devoted.

Very truly yours,

MARY F. PEIRCE, *First Assistant.*

The resolutions : —

WHEREAS, Miss Mary F. Peirce, of the High School, has stated that she is not a candidate for reëlection ; therefore

Resolved, That the School Board is sensible that the High School parts with a faithful and accomplished teacher ; one who has been connected with it for more than thirty years, and who has been devoted to its interests in many ways apart from and beyond the assigned routine of daily duty.

Resolved, That we tender to Miss Peirce the assurance of our regret for the occasion of her withdrawal from our corps of teachers, with our earnest hope that the rest she seeks may soon and fully restore her health.

These resolutions are in substance what has been said of these teachers from time to time in the school reports of former years, when it was the custom of the committee to speak in detail of the separate schools. The following words are taken from these reports : —

(1852) : "The distinguished ability and fidelity of the master, Mr. Mansfield, have long been known to the committee and to the citizens generally."

(1855) : "The high excellence of this school (the Washington School) appears, not merely in the public and formal examinations, but especially in the work of every day. Nothing seems to be done for display, but for substantial and permanent effect. * * * Improvement is doubtless possible, for no human institution is quite perfect ; but as to the general management and character of the school the committee feel great satisfaction, and refer to it as one of the best with which they have any acquaintance."

(1856) : "Miss Hastings and Miss Peirce have been connected with the High School many years, and are model teachers. The committee neither expect nor desire better instruction than is daily given by them to their classes."

(1856): "The Washington Grammar School continues to be what it has long been, one of the best in the city, probably one of the best in the State."

(1857): "Miss Hastings and Miss Peirce have so uniformly received the best praise which language can express, that the earnest commendation which we should rejoice to bestow would seem superfluous."

(1857): "The Washington Grammar School must always be named with respect. Perhaps no better attendance can be expected than here: no more uniform excellence in all departments: no deeper sense of responsibility on the teachers' part: no more delightful sympathy on the scholars' side. * * * If there is any better grammar school anywhere in the world, it would be delightful to visit it."

The Superintendent has been intimately acquainted with Mr. Mansfield for more than thirty years. As a brother teacher, before being made Superintendent, he knew of the work as it was carried on in the Washington School; and of Mr. Mansfield it can truly be said that he was a faithful, conscientious, devoted teacher, and merited the high commendation which he has received.

At the beginning of the school year, in September, two of our grammar school teachers resigned, to accept positions in other places. One of these teachers is now principal of a training school; the other occupies a position similar to the one she held in Cambridge. Both now receive a salary of $1,000 per annum. In Cambridge their salaries were, respectively, $620 and $700.

Thirty new teachers have been appointed the past year to permanent places. The majority of these are Cambridge girls, graduates of our High School and of our Training School, or, as in the case of the appointments in the High Schools, of the Harvard Annex or of Boston University.

In the selection of teachers it is the purpose of the Committee carefully to consider the fitness of every applicant for the position to be filled, and then to make such an appointment as it is believed will be for the interest of the schools, preference being always given, when qualifications are the same, to persons belonging in Cambridge. With the frequent loss of able teachers it is not thought wise to fill all vacancies with those who are

young and inexperienced, but since the opening of the Wellington School the Committee is able to appoint a larger number of young teachers, because of the special training which they receive in that school.

During the past year the city has secured the services of several teachers who in other places have attained eminence in their profession.

If the schools of Cambridge are entitled to the good name they bear, it is because so large a proportion of the 233 teachers understand their work, and are doing it faithfully. The prime essential for a good school is a good teacher. No more important work is done by any committee of the Board than by the Committee on the Examination of Teachers.

High Schools.

As the past year is an epoch in the history of the High School, a brief sketch of its organization and the changes it has experienced may not be out of place in this report.

From the "Early History" of the school by Mr. Elbridge Smith, we learn that in 1838 a Classical or High School was established for the whole town, and that a building was erected for it at the corner of Winsor street and Broadway. This location, it appears, was not found convenient for the population. Classical instruction was, therefore, in 1843, reëstablished in the Grammar School in Old Cambridge, and in the Otis School in East Cambridge. In October, 1847, a High School for the whole city was again organized in the house built for the purpose in 1838; but high school instruction was continued in the Grammar School in Old Cambridge until the following year. In 1848 a new building was erected on Amory street, and here the school remained until its removal, in 1864, to the present building on Fayette street. This has been its home for more than 20 years, but during the latter part of the period it became necessary to occupy two or three rooms in other school buildings.

March 1, 1886, the Classical and English Departments were made two separate schools, called, respectively, "The Cambridge Latin School" and "The Cambridge English High School." The former was removed to a building provided for it on Lee street, and the latter remained in the old home on Fayette street. Both schools continued under the same Head-master, Mr. Bradbury,

until the close of the school year in July, and great credit is due to him for the successful manner in which the division was effected and the work of the schools carried on under many difficulties. In September the two schools were organized, as was intended from the beginning, with a Principal for each. Mr. Bradbury remained in charge of the Latin School, and Mr. Frank A. Hill, of Chelsea, was elected Head-master of the English School. Mr. Hill is too well known as a prominent teacher in the State to need words of introduction or commendation. Already there are clearly defined plans for the English High School, and it is gratifying to see with what earnestness both teachers and pupils are endeavoring to carry them out. The same can be said of the Latin School. Undoubtedly the maintenance of these schools will be somewhat more expensive than if they had remained under one organization, but we believe that the superior advantages they now enjoy will more than justify the increased outlay.

By request, the Head-masters have prepared for this report a somewhat detailed account of their respective schools.

Mr. Bradbury's is as follows: —

During the months of January and February, 1886, the Cambridge High School had 515 pupils and 15 teachers—6 males and 9 females.

Of the pupils about 25 occupied the basement of the High School building, and about 100, with 3 teachers, were in the upper story of the Harvard Grammar School-house. Thus, for lack of proper room, the school was carried on at some disadvantage.

On Friday, February 26, in the midst of a blinding snow storm, the Cambridge High School, as it had been constituted for almost 40 years, ceased to exist; and on Monday morning, March 1, two sturdy children, the Cambridge Latin School and the English High School, appeared, the latter occupying the old home, and the former taking possession of the building that had been fitted up for it on Lee street. The work had been carefully laid out so that each school went through its full programme of recitations on the first day.

Of the 500 pupils, 165—107 boys and 58 girls—went to the Latin School.

Besides the Head-master, who had charge of both schools, there were in the English High School 3 male teachers and 7 female teachers, and in the Latin School 1 male teacher and 4 female teachers. This arrangement of two schools under one head was continued until the summer vacation, and the graduating exercises in Sanders Theatre at the close of the spring term were participated in by the graduating classes of both schools. At this time there graduated from the English High School in the full (four years) course 35, of whom 10 were boys; and in the Commercial (two years) course 6, all boys; and from the Latin School 21, of whom 7 were girls. Of these graduates of the English High School

2 boys have entered the Harvard Law School as special students, 1 the Lawrence Scientific School, and 2 are now in the Latin School; 3 girls are in Normal Schools, 1 is in the Latin School, and 2 have returned to the English High School.

Of the graduates from the Latin School 14 boys are in Harvard College, and 6 of the girls passed the examination for admission to the Annex. Of these six girls two are in the Annex, two in Boston University, and one in Wellesley. Of the twenty who took the examinations for admission to college nine entered without conditions. From the second class of the Latin School fifteen took the preliminary examination for admission to college. These fifteen wrote 116 examination papers, and not a single paper was marked conditioned.

At the beginning of the Fall term in September, Mr. Frank A. Hill became Head-master of the English High School, and the time of the former Head-master was given entirely to the Latin School.

The Latin school now has on its roll 185, of whom 75 are girls.

These pupils are seated in five rooms, of which not one is large enough to accommodate comfortably over 30 pupils. The building is arranged for 6 teachers only, and already at least two more teachers are needed to do the work of the school efficiently.

If the school had as many teachers in proportion to its numbers as the Roxbury Latin School has, it would have 9 (almost 10), instead of 6, teachers. Thus it will be seen that, even if the school does not increase, there is an immediate and absolute necessity that more room should be secured. No one, least of all the writer, believed that the Latin School would have for a long time anything like the number of pupils that it has. A plan has been prepared by the Superintendent, by which two rooms, with seats for about 70 pupils, at an expense of not over $2,500, can be added to the building.

As the Cambridge Latin School is often compared, or contrasted, with the Roxbury Latin School, it ought to be known that the Roxbury Latin School, with only 150 pupils, has 5 male and 2 female teachers, while the Cambridge Latin School, with 180 pupils, has 2 male and 4 female teachers. The salaries of the 7 teachers of the Roxbury Latin School amount to $13,450; while the salaries of the 6 in the Cambridge Latin School amount to $7,700.

A course of study has recently been adopted for the Latin School, which differs from the former classical course in the Cambridge High School, chiefly, in introducing oral Geometry in the first year, requiring more time for Physics, lessening the amount of work in the year before the preliminary examination for admission to Harvard, replacing Arithmetic by Astronomy in the fourth year (second class), and increasing the amount of English. The course of study for the school is for the most part settled by the requirements for admission to Harvard College.

This course of study gives but *one* way of entering college. For several years there have been no less than twelve ways of entering Harvard College, and on the plan that goes into effect in June, 1887, there are more than 2,000 ways; that is, more than 2,000 candidates can present themselves on the requirements, and no two on precisely the same topics.

That our preparatory schools have sent their pupils prepared to enter college through one door only, and that the Greek door, comes from the

fact that until within a few years the colleges provided no other way; and both in the later requisitions offered by Harvard College alone, and in the proposed requisitions, this (the Greek way) is the easier way. And, further, the substitution of German, Mathematics, and Physics for Greek or Latin requires a division of the several classes, a consequent increase in the number of recitations, more teachers, and more room. It ought also to be kept in mind that the Latin School must fit pupils not only for Harvard, but also for other colleges. In the present first class there are three who will go to Boston University. The teachers in the school are ready to do he work in German, Mathematics, or Physics as soon as the Committee are willing to make provision for it. Whether pupils will be found who desire to take the German and Science equivalents for admission to Harvard is doubtful.

Those who have examined the question quite generally admit that there is more work in the German and Science requirements than in the Classical requirements; and, further, that until the demands are lessened, only those who have special taste for Mathematics and Science will be induced to try to enter college by any other than the Greek door.

The Cambridge Latin School has at the present time one young man who has passed the preliminary examination in nine subjects—none of them Greek—and will present himself next year, after only one year's study of Greek, in the Elementary Greek requirement, and enough more subjects to meet the requirements. But this young man is taking one subject outside of the school.

The requirements (as stated in the Harvard Catalogue), for admission without Greek or Latin are : —

"(*c*) On all the elementary studies, with the exeeption of either Greek or Latin, and on at least *four* advaneed studies, ineluding 6, and one of the three numbered 7, 8, and 9.

" (*d*) On all the elementary studies, with the exception of either Greek or Latin and in either German or Freneh, and in at least *five* advaneed studies, ineluding 6, and one of the three numbered 7, 8, and 9."

By the first (*c*) of these two methods German replaces, say, the Greek. In the Latin School Greek is taken during the last three years of the Course.

Now the German requirement for the preliminary is as difficult, and will take as much time as the Greek ; and if, as would be expected, the German or the French is continued, so as to make one of the *four* advanced studies required, each of these is fully as difficult and will take as much time as the Greek.

Now of the other three advanced studies, Latin may be one. At this point we have covered an equivalent for the classical requirement. But in addition to this, 6, and one of the three numbered 7, 8 and 9, must be taken.

"6, Mathematies, (*a*) Logarithms, Plane Trigonometry, with its applieations to Surveying and Navigation. (*b*) Either Solid Geometry or the elements of Analytie Geometry."

"7, Mathematies, (*a*) Either the elements of Analytie Geometry or Solid Geometry. (*b*) Elementary Meehanies."

"8, Physical Scienee—Physies. A course of at least sixty experiments in addition to those of the Elementary Physics 8 (2)."

"9, Physical Science—Chemistry. A course of at least sixty experiments in 'General Chemistry' actually performed at the school by the pupils." (Harvard Catalogue, 1886 and 1887).

These two additional subjects would take the average boy at least two-thirds of a year to do properly.

Nothing would please the writer more than to teach with, or in the place of, the Greek, the advanced Mathematics in these requirements, or please Mr. Adams more than to teach the German with, or in place of, the Latin. Whenever the Committee are willing to provide additional room and additional teachers, we shall be glad to begin upon this work.

Mr. Hill gives the following account of the English High School :

The English High School was opened in September under its new organization. The non-collegiate course of study that had already received the approval of experience was in substance retained. The modifications made were made the more easily because it was not necessary to think of the needs of college pupils or the demands of college authorities. The chief aim proposed in the changes was to place greater stress upon the teaching of English and of Science, and to give more liberty of choice in the languages.

Physics and Chemistry, therefore, which had previously been taught by the same teacher and under conditions such that only one year could be given to both these important subjects combined, were assigned to separate teachers. The time for Physics was extended from seven months to one year; for Chemistry, from three months to six. A fuller course is thus offered the pupil; instruction is concentrated; closer attention is given to the individual; and the way opened to serious laboratory work.

In Chemistry the pupils have been placed squarely on the experimental basis. The basement laboratory room, was refitted, iron sinks put in, chemical equipment added to that on hand, and the pupils set to work under an experienced instructor. These pupils have prepared apparatus out of the material on hand, performed experiments, made notes, and worked out results. Training rather than mere information has been the ideal. Power to do with the hands, habits of close observation and keen reflection, the establishment of principles by induction, reliance on nature and on self, skill in using nature as a witness in cases of doubt,—in short, the awakening and strengthening of what is called the scientific spirit,—such have been the ends proposed.

The teacher has directed the pupils in this work, performed for them important experiments of unusual nicety or difficulty, examined them orally and in writing, and, in general, has aimed not so much to put facts into their minds as to draw principles out,—a process, which, if properly conducted, is sure to keep facts and principles in a relationship so close as to favor the tenacious holding of both.

It is thought that the method adopted will lead the pupil to a more intelligent appreciation of such experiments as the teacher may perform and the book may describe, to more rapid progress in text-book work and in the literature of science, and to feel a deeper and more real in-

terest in the phenomena of science that abound in the world about him.

The aims in Physics have been the same as those that have shaped the instruction in Chemistry, and rest upon the same reasons. So far as practicable, the pupils have done work at the tables which have been provided. They have been led to see, to infer, and to make notes. They have shown, as a rule, genuine interest in their work.

The equipment of the laboratory for lecture table purposes is good; for the pupil's personal work, poor. Indeed, the problem of a suitable experimental or laboratory course in Physics is a difficult one to solve. The subject has many branches. Under each there are many facts and principles that fairly educated people can hardly be pardoned for not knowing, but which, in the limits of a single year, it would be impossible experimentally to fix. Experience in physical laboratory work has been meagre. It is not easy to decide how far quantitative or measurement work ought to be carried. There is a greater number of typical or representative experiments from which a course may be framed, and, therefore, a greater diversity of opinion as to what should be selected from this number, than in Chemistry. The apparatus for individual work is more expensive and more difficult to duplicate. Add to this the evident drift of some of our higher institutions and of numerous thoughtful minds towards demanding a greater proficiency in science from High School pupils than has been attained in the past, and the problem becomes more serious still.

Greater stress in the new course is placed upon English. In the youngest class pupils are required, not in the way of the larger and more formal works on rhetoric, but by simple methods adapted to their immaturity, to apply the principles of composition already known, but in which they need constant practice.

They are taught also to transform the elements of language in numerous ways so as to get variety of expression, and to study the principles of language so as to get concord, directness, purity, and vigor. They are led by reproductions, developments, paraphrases, analyses, and such exercises towards original composition.

As English and History in the lowest class fall to the same teachers, teaching history is made at appropriate points to bear on the teaching of English.

In the first class special and valuable work in English, in addition to the prescribed work of the curriculum, has been done by the Master's Assistant.

In all the classes the stimulus to greater care and thought in the use of the mother tongue is felt.

Latin henceforth is to be studied for the first three years only. Thus pupils who take Latin and those who do not, come together the last year on common ground.

Some details of the new course remain to be worked out, particularly those in History and in Drawing.

In the transition from the old plan to the revised one, some classes necessarily work on the old course, others on the revised.

Special provision has been made to prepare pupils to take their preliminary examinations for admission to the Institute of Technology

at the end of three years, and their final examinations at the end of four.

No diplomas will be given hereafter except for a full course of four years. Pupils may, however, as in the past, take commercial subjects for two years and then withdraw, or they may keep on for one or two years longer in a course especially fitted for them.

The school was at the outset placed squarely on the basis of confidence in the excellent intentions of the pupils and in the moral power of the teachers to control them. It is due of course to a certain momentum of good habit acquired because of judicious and strong management in the past, and to the good sense of the pupils, that the conditions for such an experiment were found so favorable.

No checks have been given for misdemeanors, no record kept of behavior. Teachers have gone on the principle of managing their own cases as far as possible. When pupils fail to respond to good advice, when it becomes obvious that they need stronger treatment, when it is clear that they are not reached by a system that appeals to their manhood, then only is a deportment record to be kept.

No name is placed on the deportment list except by authority of the Head-master, nor does he mean to place a name there until he has given the pupil a final chance to set himself right. A note to the parents at this juncture frequently helps.

The name once on the list, the following printed blank, properly filled out, is attached to the report that is sent to the parents:

A Deportment Record will be kept for this report beginning.....
The number of misdemeanors noted by teachers will be entered in the deportment column. Should complaints against the pupil continue to be made, he will be censured. If the censure is not followed by immediate and marked improvement, his suspension will be ordered in accordance with section xi. chap. ii., Rules and Regulations of the Cambridge Public Schools.

This is the.....report in Class.....to which it has been found necessary to attach this rule.

The plan has worked admirably in practice thus far. Although four months have elapsed, no name has been placed upon the deportment list. Two persons have been reported to the Head-master, but so prompt was the change in their behavior that no further action has been taken. The teachers are relieved from the necessity of assigning values to behavior either by figures on some scale, or by some descriptive terms.

The conditions are more favorable for direct work at the sources of conduct. The pupils are led to feel that it is a discreditable thing that there should be occasion for a behavior record.

Behavior is a matter of the heart as well as of external conduct. A surface turbulence may come from pure springs. A surface propriety may be unprincipled or impure beneath. A plan that requires under these perplexing conditions as many expressions of opinion about conduct as there are pupils is a trying one for conscientious teachers to carry out. If they make the attempt, they may set up, not exactly false standards, but certainly incomplete ones, because they are based upon a surface, and, therefore, a partial view.

This plan was tried in another school after a personal experience of more than twenty years with various marking systems for deportment.

It was begun with many misgivings as to consequences, but the results were so favorable as to justify further trial of the plan here.

The teaching force numbers twelve. Four of these, Frank A. Hill, George F. Jewett, Kate P. Richardson and, Clara A. Armes, are new to the school.

Mr. Jewett is special instructor in Chemistry. His service ends in February when Chemistry is dropped and Botany is taken in its stead. The four sections of the second class will then be reduced to three, and the remaining work for the year will be done by the reduced force.

The number of different pupils registered since September, 1886, is three hundred and fifty-one. These are divided among the several classes as follows: First class, 41; second class, 59; third class, 111; fourth, or entering class, 140.

Of the fourth class, 46 have chosen the non-Latin course. Of the third class 27 take the non-Latin course.

The needs of the school are the following:

1. A larger, more cheerful, better ventilated, better equipped, and more easily accessible chemical laboratory than the one now in use.

The present is behind that laboratory which Cambridge ought to have, and is inferior to the laboratories that are put into modern school buildings.

2. Further equipment for the physical laboratory. What is on hand is good for the lecture table. What is wanted is apparatus suitable for pupils to use, and enough of it to employ at any one time a section of, say, twenty-five pupils. Five successive sections could use such apparatus.

3. A school-room large enough to assemble the pupils of the school for singing, lecture, general exercise, and other school purposes. The sacrifice of the old school hall several years ago to the growth of the school, while necessary, was unfortunate.

4. A systematic annual addition to the school library. It is not expedient to add books that bear no relation to the work of the school. The public library makes it unnecessary to do so. Books to which pupils would naturally refer, such as the latest and best cyclopædias and compendiums, modern works in Astronomy, Physics, Chemistry, Botany, works that are helpful to the study of the various authors that are read in course,—these, if sufficiently intelligible to the young, should be from time to time added to the excellent collection on hand. A moderate annual expenditure would save some departments of the library from the infirmities of age.

On the other hand, the limit of accommodations for the library has been reached, if not passed. The typical school library has not merely shelves for the books, but tables, chairs, special reference collections, and modern facilities for using the library easily and to its utmost.

5. A general renovation of the building from basement to attic. The floors were laid during the War when southern pine could not be obtained. The boards are badly worn and splintered. They are filled with dust. They can neither be swept clean nor washed clean. Every footstep raises dust, and the air is vitiated by it.

The woodwork, walls, and sashes, all need attention,—in brief, everything that shows within the excellent walls has felt the wear and tear of time, and needs renewing in substance or in surface.

It would be easy to give more details, but it is needless. Some of these needs can be readily met; others, in the nature of the case, cannot be satisfied except by building anew.

It is a perplexing problem just how far money should be expended on a structure already outgrown in some ways and destined soon to be outgrown in all, when it is certain that no expenditure upon it will meet the most pressing needs of the school.

While the chief requisite for a good school must always be capable pupils and wise teachers, requisites whose lack can never be made good by school palaces and costly outfits, it is not unreasonable to ask that school buildings and school equipment shall give evidence of as much care, skill, adaptation of means to ends, artistic sense, as may be seen in products of civilization all about us.

The Wellington School.

[This is the Cambridge Training or Practice School.]

This school was opened in September, 1884, and differs from the other schools in this respect,—all the classes are taught by young teachers. Their work, however, is done under the immediate supervision of a master and a female assistant, who are held responsible for the instruction and management of the school.

The object in conducting a school on this plan is to give our Cambridge young women who desire to teach, and who have made special preparation for the work, an opportunity to gain experience under conditions favorable to their own success, and without prejudice to the interest of their pupils.

Graduates of the English High School or the Latin School, who have also graduated from one of our State Normal Schools or from the Boston Normal School, will be preferred candidates for the position of teacher in this school. By special vote of the Committee on the Training Class, other persons of equal attainments may be elected.

The required term of service is one year, and all teachers accepting positions do it with the understanding that they will remain for this length of time, unless excused by the Committee on the Training Class. Teachers may be retained for a longer period by vote of this Committee.

During the first year of service no teacher in this school is expected to act as a substitute except for a single day, or until a teacher of longer experience can be secured. In case the Committee cannot obtain an experienced substitute, it shall be the

duty of the one temporarily employed to notify the Superintendent of Schools.

The money compensation for service is as follows: Teachers are paid for the first four months at the rate of one hundred and fifty dollars per annum, afterwards at the rate of two hundred dollars per annum.

The school contains all the classes of the primary grade, with the fourth, fifth, and sixth classes of the grammar grade, the number of pupils being about four hundred and fifty.

The Committee on the Training Class is authorized in the management of this school "to expend for salaries, in its discretion, an amount not exceeding the aggregate maximum salaries paid to female teachers for the instruction of the same number of pupils in the primary and grammar schools."

By this plan the advantages of a training school and a practice school are secured without cost to the city, and, judging by the present condition of the school and by the results of the examinations for promotion, we find that the pupils in this school are equally favored with those in the other schools of the city. While the teachers are young and inexperienced, it should be remembered that they are graduates* of a high school, and also of a normal school, and that their inexperience is supplemented by the experience of two able teachers.

City School.

The City School was established at the Almshouse thirty years ago by the School Committee at the request of the Overseers of the Poor, and it continued under the supervision of the Committee until September of the present year. For several years it has been the opinion of the Committee that instruction in manual work should be given in this school. In 1882 the Superintendent in his report wrote: "I would like to see the experiment of manual training tried in our City School. This school is composed almost wholly of boys, many of whom are sent there for truancy. Out of school these boys are still under the oversight of some person, and are restricted in their freedom to the play-room and the play-ground. During the long days of

* At the present time a few of these teachers are not graduates of both a high school and a normal school; but it is the purpose of the Committee as the object and plan of the school become more generally understood, to appoint such graduates only.

the year, time must hang heavily on their hands. How changed would these hours of recreation be, were these boys to become interested in the use of the plane, the saw, and the hammer! And it is more than possible that the change would reach beyond the months of their connection with this school. There is a fascination to a boy in the use of tools, and the knowledge of their use may be of great service to him in after years. It may save him from a life of indolence, and be the means by which he will earn an honest livelihood."

Acting upon this suggestion the Committee on the City School was directed by the Board "to consider whether it is advisable to introduce into the City School a course of instruction in some manual art." At a subsequent meeting the following report was made: "That, in the opinion of the Committee, instruction and practice in manual work would be eminently advantageous if introduced into the schools,—helping rather than hindering intellectual progress, as well as tending to impart correct ideas of the dignity and worth of labor,—and that in the City School especially, such instruction and employment would be of peculiar value, and could be more readily there introduced than elsewhere."

"The Committee, however, does not recommend any present action in the matter. There is no money for the purpose at the disposal of the School Board, and, as the appropriations of the City Council are already determined, it is judged that the whole subject be postponed till the beginning of the next financial year."

In presenting the estimates for the following year, the Committee recommended an appropriation of four hundred dollars for industrial instruction in the City School. The City Council, however, did not include this item in the appropriations.

The opinion of the School Committee was also held by the Overseers of the Poor, and as no specific appropriation would be required, were the school under the management of the latter, the Committee desired to transfer the school to the care of the Overseers, provided it could legally be done. The Superintendent was therefore directed to obtain the opinion of the City Solicitor upon the subject. He decided that the proposed change was legal; and the City School passed from the control of the School Committee to that of the Overseers of the Poor.

The full text of the opinion of the City Solicitor is as follows:

CITY SOLICITOR'S OFFICE,
CAMBRIDGE, APRIL 15, 1886.

Francis Cogswell, Esq., Superintendent of the Public Schools of the City of Cambridge:—

DEAR SIR:—I have received from you the following questions, viz:

First. Which board, the School Committee, or the Overseers of the Poor, has jurisdiction over the "City School"?

Second. If the School Committee has jurisdiction, has it a legal right to transfer to the Board of Overseers of the Poor the entire responsibility of the maintenance, instruction, and government of the school or any part of the responsibility?

In endeavoring to answer these, I call your attention to the history and composition of the school, and to certain statutes and ordinances relating to the powers and duties of cities and towns, School Committees, and Overseers of the Poor.

The first attempt to carry on a school at the Almshouse in Cambridge was in the year 1851, when a school was established there for pauper children, by the School Board; a teacher was appointed who taught some months into the following year, when the undertaking was brought to an end by the removal of the pupils to the State Almshouse, by an order of the Governor of the Commonwealth.

No further step in this direction was taken until 1856, when, as appears in the records of the School Committee, the Overseers of the Poor requested the School Committee to make provisions for a school at the Almshouse, the salary of the teacher to be paid from the appropriation for public instruction, and her board to be furnished at the Almshouse by the Overseers of the Poor. The School Committee acceded to the request and reopened the school under the name of the "City Primary School." This school appears to have been since continued for the pauper children at the Almshouse, and also for the truants committed under the ordinance of the year 1853, and the ordinance of 1880.

The first statute under which truants became inmates of the Almshouse was passed in the year 1850, before any school was established. The statute under which the present pupils were committed was passed in 1873, and is now embodied in chap. 48 of the Public Statutes, sec. 10.

It is provided in said chap. 48, that each town (which term includes city) shall make all needful provisions and arrangements concerning habitual truants and children between the ages of seven and fifteen years, who may be found wandering about the streets and growing up in ignorance; and shall make such by-laws as shall be most conducive to the welfare of such children, and to the good order of such town; and shall provide suitable places for the confinement, discipline, and instruction of such children, etc. Sec. 11 of said statute provides that truant officers shall make complaints, and serve the mittimus of the courts in such cases. Sec. 12 provides that any minor child convicted under a by-law made under sec. 10 shall be committed to any institution of instruction, or suitable situation provided for the purpose, for a term not exceeding two years.

To comply with the statute of 1873 the City Council in 1880 passed an

ordinance,—sec. 4, of chap. 30, of the Revised Ordinances,—which provides that minor children, such as are described in the statute, shall be committed to the Almshouse for such time not exceeding two years, as the justice of the police court may determine. And it further provides that the *Almshouse* is the institution provided for the "*confinement, discipline,* and *instruction*" of such children.

The law provides—Public Statutes, chap. 33, sec. 3—that every city or town having a workhouse or almshouse may annually choose a certain number of directors, who shall have the "inspection and government" thereof, and who may appoint a master, and necessary assistants, for the more immediate care and superintendence of the persons received and employed therein. And where such directors are not chosen the Overseers of the Poor shall be the directors.

Chap. 40 of the ordinances of the City, constitutes the almshouse the workhouse, and the Overseers of the Poor the directors of the same. Chapter 84, sec. 2 of the Public Statutes directs that the Overseers of the Poor shall have the care and oversight of all poor and indigent persons, and shall see that they are suitably relieved, supported, and employed either in the workhouse or almshouse, or in such other manner as the city or town directs, or otherwise in the discretion of the said Overseers. It is further provided by law that every town shall elect a School Committee, which shall have *general charge and superintendence of "all the public schools"* in the town. And special jurisdiction is given to the School Committee over *industrial, nautical,* and *evening* schools, which by statute may be established in towns. Public Statutes, chap. 44, sec. 8, 9, 12, 13, and 21.

After an examination of the foregoing, and other statutes and ordinances relating to the subject, I am of the opinion that the School Committee, independently of the Board of Overseers of the Poor, has no jurisdiction over the City School established at the Almshouse; that the pupils of that school, sentenced there by the court, are committed to the Almshouse, for "confinement and discipline," as well as "instruction," and during the term of their sentences can be at no time out of the control or jurisdiction of the Overseers of the Poor, and the Superintendent of the Almshouse, who is the master chosen to have the more immediate care and superintendence of all the inmates of the institution; and the pauper children are likewise under similar care, control, and superintendence, while inmates of the Almshouse, whether attending this school (which is *not* a public school) or in other parts of the building or grounds.

Acting by request of the Overseers of the Poor, as shown by the records, the School Committee has properly and legally taken charge of this school, and may continue to do so; but I cannot think that it has power there, not derived from such Overseers; that it can act contrary to their direction; or that it has any independent jurisdiction over either class of pupils.

It would seem, therefore, that in the absence of any directing statute or ordinance, the School Board may at any time decline to take further charge of this school. Respectfully submitted,

CHAS. J. McINTIRE,

City Solicitor of Cambridge.

Evening Schools, 1885-1886.

Three schools were opened, one in each of the Wards 3, 4, and 5. The school in Ward 3 was taught in two sections; one section meeting three evenings a week, and the other, two evenings. In Wards 4 and 5 the schools were not divided.

It was the intention of the Committee that the number of sessions of each school should be fifty, but in Ward 3 the division that met two evenings a week held but thirty-two sessions, it being thought best to close both divisions at very nearly the same time. In Ward 5 the school became so reduced in numbers that under the rules of the Committee it was closed after holding thirty-four sessions.

The schools as now organized and managed are doing more profitable work than formerly. The crowd of boys who thronged the school-rooms in the opening sessions of previous years, and who came merely to see what was going on and not for the purpose of study, are not now admitted.

No person under eighteen years of age can join our evening schools except at the request of his parent or guardian. The schools are well supplied with books and material for work; the pressing need is better accommodations. The School Committee, however, has no authority in this matter. It belongs to the City Council to decide whether or not the evening schools as well as the day schools shall be provided with suitable rooms.

The statistics given below show the whole number of pupils registered in each school; the average attendance; the average number of pupils per teacher; the average age; and the number of pupils 18 years of age and over. It appears that the average age is between 18 and 19 years.

	No. Registered and Present more than two Sessions.	Average Attendance.	Average No. Pupils per Teacher.	Average Age.	No. 18 yrs. old and over.
Ward 3	159	37.	7.4	18.	64
4	122	52.5	12.8	19.4	83
5	73	18.5	7.4	17.5	35

Evening Drawing Schools, 1885-1886.

Mr. George E. Woodman has been the principal of these schools since October, 1880, and under his direction the work has been carried on in a very satisfactory manner. The fact that a large per cent of those in attendance have been connected with the schools for three or four years indicates skill on the part of the teachers and interest on the part of the pupils. The class in free-hand drawing meets in the City Building, Brattle Square, on Mondays and Fridays from October to April, and the one in mechanical drawing in the Central Square Building, Cambridgeport, on Tuesdays and Thursdays for the same period.

The average attendance at the schools which closed last April, for the fifty sessions which had been held, was: free-hand, 62; mechanical, 44. There were two assistant teachers for each class. The schools at the present time are well attended, and there is no abatement of interest.

Industrial School.

In February, 1884, the Cambridge Industrial Association through a committee appointed for the purpose made to the School Board the following proposal and suggestions:

"Our Association has, in the basement of the City Building, Brattle Square, well equipped work-benches, with tools and all accommodations for the instruction of twelve (12) boys under the charge of a competent and experienced teacher. These implements, equipments, and instruction, the Association offers for the use of either of the City Schools during the present school year, *free of expense*, in case the School Committee think such use advisable.

"The Association would suggest, if it seems practicable to the Committee, some such plan as this: That boys of the higher classes, whose record in school is good and who have any aptitude in the use of tools, be allowed one afternoon in the week, to substitute for their regular literary employment two hours' practice at the bench; it being understood that they shall keep up with the studies of their classes, and that their presence and conduct in the work-room be reported as part of their school record. The room could be open for this purpose as many afternoons in the week as the Committee may desire, twelve boys being received at a time.

"A similar experiment having been tried with success in Boston, it is believed that equally good results might follow in Cambridge; and that no little mechanical dexterity might be thus gained by the pupils without any essential interruption of their other studies."

The School Committee accepted the proposal and adopted the plan suggested, a class being sent from each of the seven gram-

mar schools. The same offer was made and accepted in 1885 and in 1886.

In September, 1886, the School Committee appointed a special committee "to consider the question of industrial training, and the practicability of connecting it with the school system."

The following is the report of that committee:

"Whereas, the Industrial Association has offered to give to the City of Cambridge the tools and apparatus used by it in industrial education in the basement of the City Building in Brattle Square,—

"Your Committee recommends that industrial instruction be given to seven (7) classes, consisting of twelve (12) boys each; that one of these classes be taken from each of the following grammar schools: Allston, Harvard, Putnam, Shepard, Thorndike, Washington, and Webster; that the boys forming the classes shall be chosen by lot from those whose parents or guardians are willing to have them join such a class; that such instruction be given during the school session, the course of instruction to each class to consist of sixteen lessons, and to be similar to that given during the past year by the Industrial Association; that the management of such instruction be committed to a committee of five, one from each Ward, to be appointed by the chairman of the Board, and that this Board request the City Council to make an appropriation of four hundred (400) dollars to defray the expenses of such industrial instructor."

This report was adopted and its recommendation carried out. The City Council at once appropriated the four hundred dollars, and the seven classes are now regularly in turn receiving instruction.

Vacation Schools.

At the meeting of the Board in November a committee was appointed "to consider the expediency of establishing vacation schools to meet the needs of those children whose parents cannot find occupation for them during the long summer vacation.

This Committee recommended at the following meeting "that the experiment of opening vacation schools be tried during the next summer vacation; that a special committee consisting of one from each Ward be appointed to have charge of these schools; and that an appropriation of five hundred dollars for this purpose be introduced into the estimates for the coming year."

The report was adopted, and, should the appropriation be made, the experiment of vacation schools as a part of the school system will undoubtedly be tried.

Music.

The Committee on Music reports that there has been no essential change in the method of instruction since the last school report was made.

In that report it was recommended that the teachers in the three upper classes of the grammar schools be required to give instruction in music in their classes, in addition to the instruction of the Singing Master.

In the three lower classes of the grammar schools and in the primary schools, the teachers of the several classes, under the direction and supervision of the Singing Master, have given instruction in music as in the other branches.

With the limited time at the disposal of the teachers for this branch of study, music is of necessity taught, to a great extent, by practising in concert; therefore the percentage of independent *singers* is undoubtedly less than that of independent *readers* in our schools, where each pupil is required to read alone. In this respect, however, your Committee thinks that the method practised in our schools does not differ from that in other cities and towns where special teachers of music are employed; and that the results compare favorably with those in other places.

We believe Mr. Lincoln has faithfully performed the duties assigned him, and that he has taken pains to inform himself with regard to the methods of the most successful teachers in the State.

Drawing.

It is now two years since a Supervisor of Drawing was appointed, and we are glad to report that the expectations of the Committee at the time of the appointment have been realized.

It was then "confidently expected that under the supervision of Miss Balch increased interest would be secured, and visible progress made, in this important study."

The subject is now taught in a systematic manner. Visible progress has been made, but the time is yet too short to judge results. Of this, however, we are sure, that in every kind of instruction the best results are always secured by a systematic plan of work. The Supervisor, in her report, states that it has been her aim to have as much of the teaching as possible based upon solids; that at her request, in 1885, each grammar school

was supplied with a set of models, consisting of thirty-two pieces, sufficient to illustrate all the exercises in the books; that during the past year the third and second classes of the primary schools have also been supplied. The models provided for these classes are in sets, containing six different forms, with twenty pieces of each kind.

Pupils are expected to handle these forms, and by so doing to get a better conception of their shape than by simply looking at them at a distance, even though they should be of larger size.

The Supervisor spends a day each month in each of the five smaller grammar schools, and a day and a half in each of the other two. She also visits each primary school during each month, and spends from fifteen to thirty minutes in each room.

Special pains have been taken in the selection of pencils; a softer pencil has been used than heretofore; the use of the rubber has been somewhat restricted; and also general and specific directions in regard to the drawing have been printed and given to the teachers.

In the closing words of the report of the Supervisor of Drawing the Committee expresses the belief that "there has been a decided gain in the intelligence with which the pupils study form, and in the facility with which they draw."

Free Text-Books and Supplies.

The law requiring that every pupil in the public schools shall be provided with books and other school supplies without charge, took effect at the beginning of the school year in 1884. It has now, therefore, been in operation two full years, but not long enough to determine the average cost of the system for a series of years. The net expense for the first year, ending July, 1885, was $16,535.05; that for the year ending July, 1886, was $11,368.63. Of one thing the city can be assured, that the department of supplies is conducted on thorough business principles, and that for every dollar expended an equivalent in value is obtained.

The Committee gladly recognizes the valuable services of the agent, Mr. Sanford B. Hubbard, and also the fidelity with which the teachers perform the added duties which come to them in the care of the supplies.

The following tables, taken from the report of the Committee on Supplies, show the expenses for each school: —

High and Grammar Schools.

Names of Schools.	Text Books	Reference and Desk Books.	Blank, writing, and Drawing Books.	Apparatus and Furnishings.	Miscellaneous Supplies.	Total.
High Schools.....	$1,094 83	$37 67	$21 20	$299 64	$407 68	$1,861 02
Allston.....	$566 04	$49 03	$220 04	$39 62	$150 62	$1,023 35
Corlett..	48 71	2 11	17 67	2 25	15 11	85 85
Harvard	560 65	21 82	258 29	75 00	218 62	1,134 38
Putnam.....	416 42	41 27	199 30	46 65	102 46	806 10
Shepard.....	574 25	45 48	221 51	60 89	139 77	1,041 90
Thorndike.....	409 59	51 82	189 15	42 03	135 92	828 51
Washington.....	523 84	48 44	200 85	35 31	158 98	967 42
Webster.....	616 12	50 56	319 47	42 75	245 08	1,273 98
*Agassiz.....	147 55	19 42	61 89	30 88	37 42	297 16
*Wellington.....	128 60	9 71	67 10	28 58	70 15	304 14

* Mixed Grammar and Primary.

Primary Schools.

Names of Schools.	Text Books	Reference and Desk Books.	Drawing Books.	Apparatus and Furnishings.	Miscellaneous Supplies.	Total.
Boardman	$23 77	$9 69	$13 86	$6 49	$23 63	$77 44
Bridge	11 01	2 50	5 65	....	4 44	23 60
Cushing	8 41	2 66	5 34	63	6 74	23 78
Dana	14 85	5 55	6 45	1 77	13 65	42 27
Dunster	20 58	2 50	5 80	21	9 61	38 70
Felton	12 34	5 00	5 27	76	7 81	31 18
Gannett	19 40	5 00	5 20	42	9 03	39 05
Gore	32 89	11 75	16 95	9 34	35 90	106 83
Holmes	14 11	5 60	6 05	42	13 76	39 94
Lassell	22 81	4 67	6 80	3 30	10 68	48 26
Lowell	12 10	3 79	4 13	64	11 57	32 23
Mason	19 59	2 83	6 40	71	10 15	39 68
Otis	23 91	9 65	13 65	95	38 72	86 88
Quincy	13 82	2 83	4 67	1 05	10 86	33 23
Reed	14 34	4 99	6 35	2 22	19 60	47 50
Riverside	14 13	5 00	6 87	42	16 92	43 34
Sargent	13 80	5 32	7 07	1 86	8 43	36 48
Stearns	13 48	5 55	6 65	81	10 52	37 01
Tarbell	19 22	5 00	6 40	31	7 67	38 60
Willard	35 70	11 61	21 95	4 20	41 34	114 80
Wyman	23 33	4 67	6 45	42	12 62	47 49
High Schools	$1,094 83	$37 67	$21 20	$299 64	$407 68	$1,861 02
Grammar & Mixed	3,991 77	339 66	1,755 27	403 96	1,274 13	7,764 79
Primary	383 59	116 16	167 96	36 93	323 65	1,028 29
City	20 79	97	3 43	....	2 49	27 68
Evening	10 42	....	33 50	9 32	11 71	64 95
Total	5,501 40	494 46	1,981 36	749 85	2,019 66	10,746 73

Total of High, Grammar and Mixed, Primary, City, and Evening Schools		$10,746 73
Supplies furnished to the Officers of the Board, and used by the Committee and Superintendent		164 76
Miscellaneous expenses: —		
Covering books	$188 46	
Diplomas	80 00	
Expressage	143 90	
Printing	188 00	
		600 36
		$11,511 85
* Books sold and damages collected in schools		143 22
Total		$11,368 63

* Of this item $37.56 for books sold from those charged to the High Schools.

School-Houses and Janitors.

By the City Charter the City Council has the care and superintendence of the city buildings and all city property. The School Committee has no authority to build a school-house, not even to select its location or to decide upon the plans for its construction. While the Committee believes that this is wrong in

principle, the action of the City Council during these recent years as to plans, location, and building of school-houses has been such, in the main, as to meet the approval of the School Committee. For a series of years the relations between the City Council and the School Committee have been those of mutual respect and confidence.

The School Committee, therefore, did not hesitate to request the City Council to consider the advisability of petitioning the Legislature for such amendments to the City Charter as shall vest in the School Committee the power to appoint and remove the janitors of the school-houses, believing that a careful consideration of the proposition would convince the City Council that either the request should be granted, or some measures adopted which would result in having the school-houses properly warmed and cared for. The Committee cannot believe that the City Council realizes how seriously the schools are interrupted, and the health of pupils and teachers imperilled, from the lack of sufficient attention (or judgment) in the management of the fires. It is not for the interest of the schools, and it cannot be considered true economy, to have twenty rooms * closed in the short period of eight days because they are insufficiently warmed; neither can it be in the line of economy, nor for the health of the pupils and teachers, to have rooms heated to a temperature ranging from 75 deg. to 80 deg., rendering it necessary to close the registers, and by so doing to cut off the best supply of fresh air, while at the same time the fires are in full blast, with no water provided for evaporation, and with the cold-air boxes wholly or partially closed.

No plan has yet been devised by which school-houses can be properly warmed and ventilated without skill and constant care on the part of some one, and in the opinion of the School Committee a radical change should be made in the work required of the janitors, or rather in the work performed by them. In the first place, the whole time of a janitor, during the months when fires are required, should be given to his work. He should not only build the fires and replenish them from time to time, but he should know by frequent personal inspection during school hours

---

* Temperature of these rooms : 32°, 32°, 36°, 36°, 40°, 40°, 42°, 42°, 42°, 43°, 47°, 47°, 50°, 50°, 52°, 52°, 52°, 52°, 52°, 54°.

the temperature and condition of all the rooms. Without this knowledge he cannot decide whether the fires should be increased or checked, whether the heat should be turned into one room or another, whether the cold-air boxes should be thrown wide open or partially closed; in fact, without this knowledge he cannot intelligently perform this part of his work. In the second place, there should be a change, on the part of several of the janitors, in the spirit with which their work is done.

No doubt unreasonable complaints are sometimes made, but when many of the teachers, who, by the rules of the Committee on Public Property, are expected to direct the janitors in the performance of their duties, feel that they may as well be silent as to speak, because their wishes are not heeded, it seems to the Committee that the City Council should either place the janitors under the control of the School Committee, or should *enforce* such rules as will secure for all our school-houses proper care.

As the City Council has already decided not to place the janitors under the control of the School Committee, and made this decision without inviting the Committee to give the reasons for the request, it seems proper that the parents of the children whose school work is interrupted, and who suffer from the neglect of the janitors, should know that the responsibility does not rest with the School Committee.

WILLIAM E. RUSSELL, *Chairman ex officio.*

JOHN L. HILDRETH,
EDWARD H. HALL,
EPHRAIM EMERTON,
PHEBE M. KENDALL,
BENJAMIN F. TWEED,
HENRY N. TILTON,
EDWARD B. MALLEY,
FREEMAN HUNT,
PATRICK J. FINNIGAN,
WILLIAM H. ORCUTT,
SARAH S. JACOBS,
MOSES D. CHURCH,
WILLIAM A. START,
ALBERT M. BARNES,
JOHN W. FAIRBANKS,

School Committee.

TABULAR VIEW

OF THE

PUBLIC SCHOOLS OF CAMBRIDGE,

JANUARY 1, 1887.

Names of Schools.	Teachers.	Salaries.	No. of Scholars Jan. 1, 1887.
Latin School.	William F. Bradbury...	$2,800	183
	Theodore P. Adams.....	2,000	
	Helen M. Albee.....	875	
	Charlotte C. Barrell....	800	
	Elizabeth Emerson.....	500	
	Jennie S. Spring.....	800	
	Mary C. Warren.....	800	
English High.	Frank A. Hill.....	2,800	333
	Edwin L. Sargent.....	2,000	
	Emma F. Munroe.....	1,150	
	Clara A. Armes.....	800	
	Jessie L. Cate.	875	
	George F. Jewett.....	950	
	Margarette M. Leighton	950	
	Louisa P. Parker.....	950	
	Kate P. Richardson....	950	
	Emma A. Scudder.....	950	
	Maria E. Spare	950	
	Caroline A. Sawyer....	800	
Allston.	Benjamin W. Roberts..	2,000	563
	Mary I. Vinton.....	700	
	Sara A. Bailey.....	620	
	Mary M. Brigham.....	620	
	Mary Blair.....	620	
	Carrie Close.....	620	
	Hattie F. Fabyan	620	
	Melissa M. McKinley ..	620	
	Celia F. McFarland	620	
	Evelyn B. Kenney.....	520	
	Emily R. Pitkin.....	620	
	Ida G. Smith.....	620	
	Carrie M. Williams....	620	
Harvard.	James S. Barrell.....	2,000	719
	Frederick S. Cutter....	1,000	
	Ada H. Wellington.....	700	
	Margaret B. Wellington	700	
	Susan F. Athearn.....	620	
	Alice E. Berry	520	
	Emily F. Damon.....	620	
	Mary M. Dellamaria...	400	
	Sara A. Emerson.....	620	
	Myra I. Ellis.....	620	
	Clara A. Emerton.....	620	
	Estelle J. French.....	620	
	Frances Fabyan.....	620	
	Jennie C. Frazier.....	400	
	Cora E. Hosmer.....	620	
	Hortense O. Young....	620	

Tabular View of the Public Schools. — Continued.

Names.	Teachers.	Salaries.	No. of Scholars Jan. 1, 1887.
Putnam.	Thomas W. Davis	2,000	519
	Frederick W. Eveleth	1,000	
	Eliza M. Hussey	700	
	Delia M. Brennan	620	
	Annetta Bruce	620	
	Anna M. Dormer	470	
	Sarah M. Grieves	570	
	Annie B. Josselyn	620	
	Louise A. Keeler	470	
	Augusta G. Mirick	620	
	Eliza S. Paddack	620	
	Martha R. Smith	620	
	Mary M. Sullivan	400	
	Alice L. Watts	620	
Shepard.	Edward O. Grover	2,000	583
	Nellie A. Hutchins	700	
	Mary A. Bosworth	620	
	Dana A. Eveleth	620	
	Emily F. Fessenden	620	
	Ellen J. Hunt	620	
	A. Estelle Ingraham	620	
	Ruth E. Lander	620	
	Evelyn J. Locke	620	
	Julia H. Osgood	620	
	Clara A. Peterson	620	
	Sarah A. Rand	620	
	Adela F. Rockwood	620	
	Lizzie B. Shepherd	470	
Thorndike.	Ruel H. Fletcher	2,000	546
	Lelia A. Mirick	700	
	Grace W. Fletcher	620	
	Emma A. Hopkins	620	
	Abby A. K. Howard	620	
	Elizabeth G. Hutchinson	620	
	Martha A. Martin	620	
	Mary E. Nason	620	
	Elizabeth P. Regal	620	
	Isabella B. Tenney	620	
	Abby S. Taylor	620	
	Lydia A. Whitcher	620	
	Laura S. Westcott	620	
Washington.	John W. Freese	2,000	580
	Carrie M. Kingman	700	
	Eldora J. Clark	620	
	Lucy A. Downing	620	
	Mary L. Ells	520	
	Mary H. Hanks	620	
	Adeline M. Ireson	620	
	Adelaide A. Keeler	620	
	Adelaide A. Keith	620	
	Margaret J. Penney	620	
	Hattie Shepherd	620	
	Mary E. Stiles	620	
	Abby M. Webb	620	
	Mary A. Wheeler	620	
Webster.	John D. Billings	2,000	774
	Charles H. Morse	1,000	

Tabular View of the Public Schools. — Continued.

Names of Schools.	Teachers.	Salaries.	No. of Scholars Jan. 1, 1887.
Webster.	Lizzie C. Capen	700	
	Mary E. Towle	700	
	Marion H. Burnham	620	
	Ella E. Buttrick	620	
	Charlotte M. Chase	620	
	Florence B. Chandler	520	
	Alice K. Crosby	620	
	Susan I. Downs	400	
	Esther F. Hannum	620	
	Josephine E. Karcher	620	
	Anna S. Lamson	620	
	Gertrude A. Long	400	
	Clara E. Matchett	620	
	Alice C. Phinney	620	
	Mary A. Townsend	620	
Corlett.	Fannie P. Browning	630	74
	Sarah E. Clark	570	
Agassiz. { Grammar.	Charlotte A. Ewell	700	137
Agassiz. { Primary.	Maria L. Baldwin	620	168
	Mary G. Carpenter	620	
	Emma A. Child	620	
	Frances H. Dawson	620	
	Dora B. Dean	620	
	Rosina C. Karcher	620	
Boardman.	Mary A. Lewis	655	328
	Maria J. Bacon	620	
	Charlotte E. Hezlitt	520	
	Elizabeth J. Karcher	620	
	Sarah E. Stewart	620	
	Evelyn A. Sawyer	620	
	Annie M. Tendler	470	
Bridge.	Elizabeth E. Dallinger	630	81
	Emily C. Dallinger	620	
Cushing.	Isadore I. Foster	630	66
	Ida B. Holt	470	
Dana.	Maria F. Williams	640	169
	Elmira F. Cobb	400	
	Abby A. Lewis	620	
	Cordelia J. French	570	
Dunster.	Susan E. Wyeth	635	98
	Nellie M. Colby	470	
Felton.	Sarah J. Gunnison	640	151
	Fanny C. Hartwell	620	
	Nellie E. Hastings	400	
	Minnie F. Munroe	620	
Gannett.	Sarah J. A. Davis	640	187
	Anna M. Jones	620	
	Mary A. Rady	620	
	Carrie H. Smith	620	
Gore.	Frances E. Pendexter	670	489
	Addie M. Bettinson	620	
	Anna E. Callahan	620	
	Sarah D. Graham	620	
	Elizabeth B. Gahm	620	
	Lizzie J. Hawkins	620	
	Mary E. Mulloney	620	
	S. Louise Regal	570	

Tabular View of the Public Schools. — Continued.

Names of Schools.	Teachers.	Salaries.	No. of Scholars Jan. 1, 1887.
Gore.	Emma J. Ross	400	
	Louise A. Stickney	620	
Holmes.	Marianne M. Webb	640	179
	Margaret T. Burke	400	
	Mary L. Bullard	620	
	Ella M. Cyr	620	
Lassell.	Nellie F. Ball	640	216
	Ellen R. Avery	620	
	Cora A. Reycroft	620	
	Frances E. Whoriskey	620	
Lowell.	Winona Abercrombie	640	87
	Lucy E. Cyr	620	
	Nellie F. McCarthy	570	
Mason.	M. Lizzie Evans	630	95
	Lizzie J. Baldwin	470	
Otis.	Luvia Goodnow	660	401
	Fanny Allen	620	
	Martha H. Butler	620	
	Josephine M. Doherty	620	
	Ellen N. Leighton	620	
	Luella M. Marsh	570	
	Ellen C. Walsh	620	
	Kate F. Wellington	620	
Quincy.	Charlotte E. Jewell	630	68
	Lucy C. Wyeth	620	
Reed.	Margaret Kidd	640	189
	Helena V. Eaton	570	
	Harriet N. Keyes	620	
	Nellie E. Pratt	400	
Riverside.	Elizabeth A. Tower	640	170
	Amanda M. Alger	620	
	Mary A. Burke	470	
	Ella E. Coye	620	
Sargent.	Frances J. Harrod	640	177
	Christina D. Barbey	470	
	Mary A. Brown	620	
	Mary E. Woodman	620	
Stearns.	Helen M. Ward	640	148
	Ellen A. Cheney	620	
	Mary M. Tingey	620	
	Eva A. Taylor	400	
Tarbell.	Mary H. Ross	640	183
	Mary A. Davis	400	
	Emma J. Young	620	
	Hattie A. Thayer	400	
Willard { Grammar. Primary.	Amelia Wright	680	{ 96
	S. N. Chamberlain	620	{ 510
	Julia S. Gushee	620	
	Belle F. Gulliver	400	
	Louise W. Harris	620	
	Mary E. G. Harrington	620	
	Kate M. Lowell	620	
	Emma C. Otis	620	
	Mary E. Sawyer	620	
	Georgiana M. Tupper	520	
	Laura Wright	620	
	Grace R. Woodward	620	
Wyman.	Fannie E. M. Dennis	650	200

Tabular View of the Public Schools. — Continued.

Names of Schools.	Teachers.	Salaries.	No. of Scholars Jan. 1, 1887.
Wyman.	M. Jennie Biddle.....	470	
	M. Carrie Dickman....	620	
	Georgiana B. Dutcher..	570	
	Mary M. Gilman.....	620	
Wellington { Grammar	Herbert H. Bates.....	1,600	{ 265
Wellington { Primary.	Agnes I. Rounds.....	800	{ 186
	Training class.....	2,300	

Teacher of Singing — Nathan Lincoln	$1,700
Teacher of Drawing — Augusta L. Balch	850
Superintendent — Francis Cogswell	2,900
Agent — Sanford B. Hubbard	1,200

The Wellington School is a Training School, composed of grammar and primary scholars, taught by young ladies, graduates of Normal Schools and candidates for the office of teacher, under the direction and with the assistance of the master of the school and his assistant.

Temporary assistants and members of the Training Class are counted as five teachers, the sum of their salaries being about equal to the amount paid to that number of regular teachers.

The post-office addresses of the several schools are as follows : —

Cambridge.—Washington*, Agassiz, Dunster, Holmes, Lowell, Quincy, Riverside.

Cambridgeport.—Latin, English High, Allston*, Harvard*, Webster*, Boardman, Bridge, Dana, Felton, Gannett, Mason, Sargent, Stearns, Tarbell, Wellington, Willard.

East Cambridge.—Putnam*, Thorndike*, Gore, Lassell, Otis.

North Cambridge.—Shepard*, Reed, Wyman.

Mount Auburn.—Corlett*, Cushing.

*Grammar Schools.

Summary.

Number of pupils in High Schools	516
Number of pupils in Grammar Schools	4,856
Number of pupils in Primary Schools	*4,546
	9,918

Cost of Instruction.

High Schools	$21,940	For each pupil	$42 52
Grammar Schools	73,340	For each pupil	15 10
Primary Schools	64,990	For each pupil	14 29
Teacher of Singing	1,700		
Teacher of Drawing	850		
Superintendent	2,900		
Agent	1,200		
	$166,920	For each pupil	$16 83

Number of pupils belonging to the Public Schools, Jan. 1, 1887	9,918
Number of pupils belonging to the Public Schools, Jan. 1, 1886	9,651
Increase	267

Average annual increase of pupils from 1860 to 1874, (inclusive)	246
Decrease of pupils, 1875	268
Increase of pupils, 1876	6
Decrease of pupils, 1877	81
Decrease of pupils, 1878	50
Increase of pupils, 1879	57
Increase of pupils, 1880	286
Increase of pupils, 1881	403
Increase of pupils, 1882	448
Increase of pupils, 1883	280
Increase of pupils, 1884	165
Increase of pupils, 1885	589
Increase of pupils, 1886	267

Number of schools	33
Number of school-rooms	224
Number of teachers	233
Salaries of three Truant Officers	$2,700 00
Cost of Evening Schools	1,325 90
Cost of Drawing Schools	971 10

* The City School, kept at the Almshouse, and containing about 41 scholars, ceased in September last to be under the superintendence of the School Committee, and its pupils are not included in this statement.

SECOND PART

OF

THE REPORT OF THE SUPERINTENDENT OF SCHOOLS.

The Superintendent respectfully submits the following additional facts and remarks as the second part of his report for the year ending Dec. 31, 1886, this being his twelfth annual report.

SUMMARY OF STATISTICS.

I.—Population.

Population of Cambridge by the State census for 1885	59,660
Number of children in the city between five and fifteen years of age, May 1, 1886, as reported by the Truant-Officers	11,131

II.—Schools.

1 Latin School, with six rooms.
1 English High School, with twelve rooms.
8 Grammar Schools, with one hundred and six rooms.
23 Primary Schools, with one hundred rooms.
2 Evening Drawing Schools, with two rooms.
2 Evening Schools, with two rooms.

Whole number of Day Schools	33
Whole number of separate rooms	224

III.—School-houses.

For the Latin School	1
For the English High School	1
For the Grammar Schools	8
For both Grammar and Primary Schools	5
For the Primary Schools	19

IV.—Teachers.

Number of teachers in Latin School 6
Male teachers, 2; female teachers, 4.
Number of teachers in English High School 12
Male teachers, 3; female teachers, 9.
Number of teachers in Grammar Schools 113
Male teachers, 11; female teachers, 102.
Number of teachers in Primary Schools 100
Number of teachers in Evening Drawing Schools, 1884-5 . . 6
Average number of teachers in Evening Schools, 1884-5 . . 16
Whole number of teachers in Day Schools, including the teacher of Music and the teacher of Drawing[1] . . . 232
Number of teachers who have attended Normal Schools . . 141
Number of teachers who have graduated from Normal Schools 121

V.—Pupils.

Attendance at all the Day Schools, 1882 to 1886.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1882	9,395	7,898	7,231	91.5
1883	9,691	8,194	7,523	91.8
1884	9,982	8,414	7,763	92.2
1885	10.213	8,650	7,915	91.5
1886	11,012	9,246	8,530	92.2

Attendance at the High School, 1882 to 1886.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1882	460	426	403	94.6
1883	438	396	375	94.6
1884	452	398	377	94.7
1885	499	462	434	94.0
1886	561	490	467	95.3

1. Temporary assistants and members of the training class are counted as six teachers; the sum of their salaries being equal to the amount paid that number of regular teachers.

Attendance at the Grammar Schools, 1882 to 1886.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1882	4,147	3,627	3,360	92.6
1883	4,186	3,728	3,462	92.8
1884	4,363	3,848	3,593	93.3
1885	4,562	4,119	3,816	92.6
1886	5,121	4,440	4,152	93.5

Attendance at the Primary Schools, 1882 to 1886.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1882	4,775	3,834	3,456	90.1
1883	5,067	4,070	3,686	90.5
1884	5,167	4,168	3,798	90.9
1885	5,152	4,069	3,664	90.0
1886	5,330	4,316	3,912	90.6

Number of Pupils Graduated from, and Admitted to, the High School and the Grammar Schools, 1882 to 1886.

Year.	Graduated from High School.	Admitted to High School.	Graduated from Grammar Schools.	Admitted to Grammar Schools.
1882	67	145	226	815
1883	70	172	251	958
1884	75	206	314	1,042
1885	72	239	303	1,103
1886	61	198	273	1,165

Number of Pupils belonging to the Evening Schools, with the Average Attendance, 1885-86.

Number of Pupils . . 354. Average Attendance . . 145.

Number of Pupils belonging to the Evening Drawing Schools, with the Average Attendance, 1882 to 1886.

1882.	1883.	1884.	1885.	1886.
153	159	212	223	223
66	89	104	110	106

Number of Pupils over Fifteen Years of Age belonging to the Day Schools on the First of May, 1882 to 1886.

1882.	1883.	1884.	1885.	1886.
523	586	668	695	739

Number of Pupils in the Private Schools in Cambridge, including the Parochial School, 1882 to 1886.

1882.	1883.	1884.	1885.	1886.
1,752	1,844	1,869	1,865	1,858

Table Showing the Number in each Class in the Latin School, December, 1886.

Class.	Boys.	Girls.	Total.	Per Cent.
First	6	7	13	.071
Second	21	10	31	.169
Third	23	15	38	.208
Fourth	26	18	44	.240
Fifth	34	23	57	.312
Total	110	73	183	

Table Showing the Number in each Class in the English High School, December, 1886.

Class.	Boys.	Girls.	Total.	Per Cent.
First	4	37	41	.123
Second	8	51	59	.177
Third , ...	38	68	106	.318
Fourth	48	79	127	.382
Total.	98	235	333	

Table showing the Number in each Class in the Grammar Schools, December, 1886.

Class.	Boys.	Girls.	Total.	Per Cent.
First	154	182	336	.069
Second	250	280	530	.109
Third	353	431	784	.162
Fourth	447	482	929	.191
Fifth	497	508	1,005	.207
Sixth	625	648	1,273	.262
Total	2,326	2,531	4,857	

Table showing the Number of Pupils in each Class in the Primary Schools, December, 1886.

Class.	Boys.	Girls.	Total.	Per Cent.
First	580	624	1,204	.265
Second	646	650	1,296	.285
Third	1,060	986	2,046	.450
Total	2,286	2,260	4546	

Summary of the School Census, as taken by the Truant Officers, May, 1886.

[The Statutes make it the duty of the School Committee annually to ascertain the names and ages of all persons belonging to their respective towns and cities on the first day of May, between the ages of five and fifteen years.]

Number of children in the city five years old or more, but less than fifteen	11,131
Number in Public Schools five years old or more, but less than fifteen	8,996
Number in Private Schools five years old or more, but less than fifteen	1,270
Number not attending school five years old or more, but less than eight	480
Number not attending school eight years old or more, but less than fourteen	187
Number not attending school fourteen years old or more, but less than fifteen	198
Whole number not attending school five years old or more, but less than fifteen	865
Number in the city five years old or more, but less than six	967
Number in the city eight years old or more, but less than fourteen	6,876

VI.—Finances.

[For the financial year ending Dec. 1, 1886.]

Cost of instruction in Day Schools	$165,277 42
Free text-books and supplies	10,680 52
Incidental expenses for Day Schools	645 94
Cost of Evening Drawing Schools	971 10
Cost of Evening Schools	1,325 90
Care and repairs of school-houses	30,932 58
Amount expended on Webster School-house	9,113 93
Amount expended for Latin School-house	9,678 18
Amount expended on Wyman School-house	3,876 65
Amount expended for school-house on Jefferson street	12,963 92
Total expenditures for all school purposes	$245,466 14
Deducting receipts from the Hopkins Fund ($668.63) and for tuition of non-resident pupils ($305), actual cost of the schools to the city	$244,492 51
Assessed value of real and personal estate, May, 1886	$59,445,670 00
Ratio of expenses for school purposes to the valuation of 1886	.004

Cost of Instruction in the Day Schools, 1876 to 1886.

[Salaries of teachers, superintendent, agent, and truant-officers.]

Year.	Whole Cost.	Average Number of Pupils.	Cost per Pupil.
1876	$164,818 00	7,066	$23 32
1877	151,946 65	7,139	21 28
1878	136,491 20	7,028	19 42
1879	132,570 49	6,957	19 05
1880	130,371 75	7,175	18 17
1881	132,501 10	7,434	17 82
1882	137,328 55	7,898	17 38
1883	144,457 60	8,194	17 63
1884	152,290 62	8,414	18 09
1885	158,640 13	8,650	18 33
1886	165,277 42	9,218	17 92

Cost of the Day Schools, 1875 to 1886.

[The expenditures for new school-houses and new furniture are not included.]

Year.	Whole Cost.	Average Number of Pupils.	Cost per Pupil.
1875	$212,960 72	7,167	$29 71
1876	200,894 09	7,066	28 43
1877	180,974 36	7,139	25 35
1878	162,437 77	7,028	23 11
1879	158,196 21	6,957	22 73
1880	153,967 56	7,175	21 45
1881	158,282 84	7,434	21 29
1882	166,230 52	7,898	21 04
1883	177,149 93	8,194	21 62
1884	203,234 56	8,414	24 15
1885	206,806 09	8,650	23 90
1886	207,536 46	9,218	22 51

Statistics taken from the Fiftieth Annual Report of the Secretary of the State Board of Education.

Number of cities and towns: cities, 23; towns, 325	348
Number of public schools	6,717
Number of pupils of all ages in the public schools during the year	349,617
Number of persons over fifteen years of age attending the public schools	27,972
Per cent of attendance based upon the average membership	90
Number of persons employed as teachers in the public schools during the year: men, 1,060; women, 8,610; total	9,670
Number of teachers who have graduated from Normal Schools	2,420
Average number of months the public schools have been kept for the entire year	8.12
Number of High Schools	224
Number of teachers in High Schools	677
Number of pupils in High Schools	21,370
Amount expended upon the public schools, exclusive of the expense of school buildings	$5,676,969 08
Cost of new school-houses, permanent improvements, and ordinary repairs	$1,475,106 30
Entire expenditure for public school purposes	$7,151,075 38
Amount of the Massachusetts School Fund, Dec. 31, 1886	$2,715,944 00

Special Institutions.

In addition to the amount paid for public schools, Massachusetts expended in 1886:—

For the deaf mutes	$27,510 44
For the blind	$30,000 00

These amounts but partly meet the expenses of those received into the institutions from the State, the balance being provided for by endowments.

The Commonwealth has provided for its deaf-mute beneficiaries at the same institutions as in previous years,—the American Asylum at Hartford, Conn., the Clarke Institution at Northampton, Mass., and the Horace Mann School at Boston,—paying *pro rata* for the care and instruction of those whom it sends. At the present time the State has about two hundred beneficiaries in these institutions, and in the Perkins Institute for the Blind eighty.

A Graduated Table in which the Cities in the State are Numerically Arranged According to the Percentage of their Taxable Property Appropriated to the Support of Public Schools for the year 1885–86:

For 1885–86, by the State Valuation of 1885.	Cities.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1885–86, by the State Valuation of 1885.	Cities.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
1	Waltham	$.004–37	13	Cambridge	$.003–13
2	Haverhill	4–14	14	Fall River	3–10
3	Gloucester	3–86	15	Taunton	3–03
4	Newton	3–58	16	Brockton	2–89
5	Somerville	3–45	17	Lowell	2–89
6	Fitchburg	3–38	18	Salem	2–83
7	Lynn	3–35	19	Lawrence	2–68
8	Worcester	3–34	20	Springfield	2–68
9	Northampton	3–27	21	Newburyport	2–65
10	Malden	3–23	22	New Bedford	2–59
11	Holyoke	3–20	23	Boston	2 02
12	Chelsea	3–17			

Towns and Cities of Middlesex County.

For 1885–86, by the State Valuation of 1885.	Towns and Cities.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1885–86, by the State Valuation of 1885.	Towns and Cities.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
1	Hudson	$.004–99	28	Medford	$.003–40
2	Marlborough	4–81	29	Melrose	3–35
3	Stoneham	4–42	30	Acton	3–32
4	Waltham	4–37	31	Malden	3–23
5	Natick	4–36	32	Framingham	3–21
6	Wakefield	4–35	33	Cambridge	3–13
7	Littleton	4–32	34	Shirley	3–06
8	Ashland	4–26	35	Wilmington	3–06
9	Ashby	4–08	36	Pepperell	3–01
10	North Reading	4–01	37	Bedford	3–00
11	Concord	3–92	38	Lexington	2–95
12	Westford	3–90	39	Lowell	2–89
13	Arlington	3–79	40	Everett	2–87
14	Boxborough	3–76	41	Maynard	2–83
15	Wayland	3–74	42	Weston	2–74
16	Watertown	3–71	43	Sherborn	2–69
17	Tyngsboro'	3–66	44	Dracut	2–60
18	Woburn	3–65	45	Dunstable	2–59
19	Hopkinton	3–62	46	Lincoln	2–34
20	Winchester	3–61	47	Burlington	2–27
21	Newton	3–58	48	Stow	2–24
22	Ayer	3–57	49	Carlisle	2–16
23	Townsend	3–51	50	Belmont	2–12
24	Holliston	3–48	51	Sudbury	2–03
25	Somerville	3–45	52	Tewksbury	2–00
26	Chelmsford	3–44	53	Billerica	1–91
27	Reading	3–43	54	Groton	1–82

REMARKS ON THE STATISTICS.

The increase over the last school year in the number of pupils registered is 799; in the average number belonging, 596; in the average daily attendance, 615; in the per cent of attendance, seven-tenths of one per cent. The number belonging to the schools in December, 1885, not including the pupils in the City School, was 9,610; in December, 1886, 9,918, an increase of 308.

The entire cost of the day schools, excluding the expenditure for new school-houses and new furniture, exceeds that of last year by $730.39, while the cost per pupil is less by $1.39. In the entire cost of instruction the increase is $6,637.29, but in the cost per pupil it is less by 41 cents.

While Cambridge expends a large amount for her schools, there are more than two hundred towns and cities in the State which make a larger expenditure in proportion to their wealth. In a list of the cities and towns, arranged numerically according to the percentage of their taxable property appropriated to the support of public schools for the year 1885–86, Cambridge is the thirteenth among the twenty-three cities, and the two hundred and twenty-first among the three hundred and forty-eight towns and cities. Compared with the fifty-four towns and cities of our county, Cambridge is the thirty-third. In a list of the towns and cities of the State, arranged numerically according to the sum appropriated for each child between five and fifteen years of age, Cambridge is the forty-second.

These statistics relating to the schools of the State are taken from the report of the Secretary of the Board of Education.

FRANCIS COGSWELL,

Superintendent of Public Schools.

APPENDIX.

APPENDIX.

ORDINANCES

PASSED SINCE THE REVISION OF THE ORDINANCES.

An Ordinance in Relation to the Salary of the City Physician.

SECTION 1. From and after the first Monday of January, 1880, the salary of the City Physician shall be at the rate of one thousand dollars per annum.

SECT. 2. So much of Sect. 1 of Chap. 27 of the Revised Ordinances as is inconsistent herewith is hereby repealed.

[*Adopted March* 3, 1880.]

An Ordinance in Amendment of the Thirty-sixth Chapter of the Revised Ordinances.

Section 27 of Chap. 36 of the Revised Ordinances is hereby amended by prefixing to the words in said section the following words: "No person shall swim or bathe, or permit any animal under his care to swim or bathe, in Fresh Pond."

[*Adopted June* 2, 1880.]

An Ordinance establishing the Salary of the Inspector of Vinegar.

SECTION 1. The salary of the Inspector of Vinegar shall be at the rate of one hundred and seventy-five dollars per annum.

SECT. 2. This ordinance shall take effect upon its passage.

[*Adopted Nov.* 3, 1880.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Chapter 6 of the Revised Ordinances is hereby amended by adding at the end of Section 24 the words : " The Committee on Finance shall employ such clerks, permanent and temporary, as may be necessary in the different departments. The duties and compensation of such clerks shall be determined by said Committee, subject, however, to change at any time by order of the City Council. No head of a department shall employ any extra clerical assistance in behalf of the city without having first obtained the consent of the Committee on Finance."

[*Adopted Nov.* 3, 1880.]

An Ordinance in Amendment of an Ordinance in Relation to the Cambridge Public Library.

Chapter 7 of the Revised Ordinances is hereby amended by striking out the second section thereof, and inserting in its place the following :

"SECT. 2. The care, superintendence and management of said library shall be vested in a board of Trustees, to consist of one member of the Board of Aldermen, one member of the Common council, and five citizens at large, one of whom shall hold office for one year, one for two years, one for three years, one for four years and one for five years, their several terms of office to be determined by lot, the same to be chosen in the month of January next; and annually thereafter in the month of January one citizen at large, whose term of office shall be for five years from the third Monday in said January, unless sooner removed."

Also, in the third section, by striking out the word " three" in the fifth line thereof, and substituting therefor the word " five," relating to the term of office of the trustees.

Also, by striking out the fourth section, and inserting in place thereof the following :—

" SECT. 4. Said trustees may choose from their number a chairman and secretary; they shall choose, annually, in the month of January, a suitable person to be librarian, who shall be removable at the pleasure of the board, and shall receive

such compensation as the trustees may from time to time determine."

The foregoing amendments shall take effect on the first Monday in the month of January, 1881, except that the trustees heretofore elected shall hold office until their successors are chosen and qualified.

[*Adopted Nov.* 17, 1880.]

An Ordinance in Amendment of an Ordinance in Relation to Sinking Funds.

Chapter 34 of the Revised Ordinances is hereby amended by striking out the last five lines of Section 4, and inserting in place thereof the following words:—

"And whenever any payment is so made before the thirtieth day of November, interest shall be paid thereon by the Commissioners of the Sinking Funds from the time of said payment until said thirtieth day of November, at such rates as the Committee on Finance shall from time to time determine."

[*Adopted Nov.* 17, 1880.

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Chapter 1 of the revised ordinances is hereby amended by inserting in the eighth line of the seventh section thereof, after the word "repair," the words "and shade trees and public grounds;" also, in the fourteenth line of the same section, by striking out the words "shade trees and public grounds."

[*Adopted Nov.* 17, 1880.]

An Ordinance in Relation to the Compensation of the Assistant City Clerk.

Chapter 27 of the Revised Ordinances is hereby amended, as follows, viz:—

"The salary of the Assistant City Clerk shall be twelve hundred dollars per annum, to date from Jan. 1, 1881."

[*Adopted March* 23, 1881.]

An Ordinance in Amendment of the Ordinance in Relation to the Water Works.

Section 25 of Chapter 39 of the Revised Ordinances is hereby amended by striking out the word "thirty," in the second line of the second paragraph and inserting in place thereof the word "fifteen."

[*Adopted May* 18, 1881.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Chapter 36 of the Revised Ordinances is hereby amended by adding, at the end of Section 26, the following:—

"Whoever shall be found in possession of a club or bludgeon, on any street, park, or way, with intent to use the same in sports, sham-fights, or strife, or to intimidate persons or horses, shall be fined not less than one dollar nor more than twenty dollars.

"Whoever shall be found in possession of toy-pistols, crotches, rubber slings, or other devices for throwing missiles of any kind, with intent to use the same to the injury of persons or property, or to the annoyance or discomfort of any person, upon any street, park, or way, shall be fined not less than one dollar nor more than twenty dollars."

[*Adopted Dec.* 7, 1881.]

An Ordinance in Amendment of an ordinance in Relation to Streets.

Chapter 36 of the Revised City Ordinances is hereby amended as follows in Section 14, by inserting in the fifth line, after the word "aldermen," the words, "or some person by them authorized for that purpose."

Also, in Section 15, by inserting in the first line, after the word "aldermen," the words, "or some person by them authorized for that purpose."

[*Adopted Dec.* 28. 1881.]

An Ordinance in Amendment of an Ordinance in Relation to Sewers.

Sections 9 and 10 of Chapter 32 of the Revised City Ordinances are hereby repealed, the same being in relation to house drainage.

Section 12 of Chapter 32 of the Revised City ordinances is hereby amended by striking out of the first line thereof the words, "and catch-basins."

[*Adopted Dec.* 28, 1881.]

An Ordinance in Amendment of an Ordinance in Relation to the Fire Department.

Chapter 16 of the Revised Ordinances is hereby amended by striking out the second section thereof, and inserting in its place the following: —

"SECT. 2. In the month of April, in the year eighteen hundred and eighty-two, there shall be appointed by the Mayor, with the approval of the Board of Aldermen, and the concurrence of the Common Council,—or, in default thereof, afterward, by a concurrent vote of the City Council, either branch acting first,—a chief engineer and three assistant engineers, who shall hold their offices until removed by the City Council, and until others are elected in their places. Whenever a vacancy occurs in either of the offices named herein the same shall be filled forthwith in the same manner as hereinbefore prescribed."

Also, by striking out the fifteenth section, and inserting in its place the following: —

"SECT. 15. The mayor and Alderman shall, in the month of January in the year eighteen hundred and eighty-two, and whenever vacancies occur, appoint the several engine, hose, and hook and ladder companies, whose term of service shall continue until the respective appointees are removed by the Mayor and Aldermen, and others appointed in their places; and the members of said companies shall receive a warrant substantially like that prescribed for engineers."

[*Adopted Dec.* 28, 1881.]

An Ordinance in Amendment of an Ordinance in Relation to Salaries.

Section 1 of Chapter 27 of the Revised Ordinances is so amended that from the first day of February, 1882, the compensation of members of the Fire Department shall be as follows:—

Chief Engineer, per year, twelve hundred dollars.

[*Adopted April* 5, 1882.]

An Ordinance in Relation to the Compensation of the Clerk of the Board of Engineers of the Fire Department.

The compensation of the Clerk of the Board of Engineers of the Fire Department shall be at the rate of twenty-five dollars per annum; such rate to take effect as of Jan. 1, 1882.

[*Adopted April* 5, 1882.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 24 of Chapter 39 of the Revised Ordinances is hereby amended by adding after the word "follows," at the end of the second paragraph, the words "*provided*, *however*, that the charge shall not be less than ten dollars for any one year; and *provided*, *further*, that when the water used by any one taker shall amount to more than five million gallons in any one year commencing with the first day of July, then the charge shall be at the rate of one cent for each one hundred gallons of the excess over that quantity."

[*Adopted April* 12, 1882.]

An Ordinance in Relation to the Salary of the Superintendent of Lamps.

Chapter 27 of the Revised Ordinances is hereby amended as follows:—

The salary of the Superintendent of Lamps shall be five hundred dollars per annum, to date from June 1, 1882.

[*Adopted June* 28, 1882.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Section 25 of Chapter 36 of the revised Ordinances is hereby amended by striking out the entire section, and inserting in place thereof the following:—

"The owner or tenant of any land abutting on any street, lane, court, square, or public place, where there is any footway or sidewalk, shall cause the snow falling on said footway or sidewalk in front of his said land, whether from any building or otherwise, to be removed therefrom within twenty-four hours after the same ceases to fall; and shall cause the ice which incumbers such footway or sidewalk to be removed or covered with sand or other suitable substance, so as to make the footway or sidewalk safe and convenient for travel. Any person failing to do so shall be fined not less than two nor more than twenty dollars."

[*Adopted July* 19, 1882.]

An Ordinance in Relation to the Boundaries of the Several Wards, and the Number of Members of the Common Council to be elected in each Ward.

SECTION 1. The boundaries of the several wards shall, until the month of October, in the year eighteen hundred and eighty-seven, continue the same as now established, with the following exceptions:—

So much of the territory annexed from the town of Belmont as lies south of a line through the center of Concord Avenue shall constitute a part of Ward One; and so much of said territory as lies north of such line shall constitute a part of Ward Five.

SECT. 2. The members of the Common Council shall be apportioned as follows: Ward One shall elect FOUR; Ward Two shall elect SIX; Ward Three shall elect FOUR; Ward Four shall elect FOUR; Ward Five shall elect TWO.

[*Adopted Oct.* 25, 1882.]

An Ordinance substituting the Words "Third District Court of Eastern Middlesex," for the Words "Police Court."

Wherever in any ordinance of the city, the words "Police Court" occur, they are hereby stricken out, and the words

"Third District Court of Eastern Middlesex" are hereby inserted in place thereof.

[*Adopted Nov.* 29, 1882.]

An Ordinance in Amendment of an Ordinance in Relation to Sewers.

Section 1 of Chapter 32 of the Revised Ordinances is hereby amended by adding at the end thereof the words: —

"Nor until the owner shall have paid to the city, as a charge for entering the public sewers, such a sum of money as the Mayor and Aldermen shall order; said sum to be not less than the amount which would be assessed upon the lands of such owner, upon the basis of the present ordinance in the case of a public sewer, less such an allowance for the cost of the private sewer as the City Engineer shall certify to the Mayor and Aldermen is reasonable."

[*Adopted Dec.* 27, 1882.]

An Ordinance in Amendment of an Ordinance in Relation to the City Physician.

Chapter 25 of the Revised Ordinances is hereby amended as follows: —

By striking out the last twenty words of the first section providing a salary for the City Physician.

Also, by striking out the second section, and inserting in place thereof the following: —

"SECT. 2. There shall also be chosen annually, in the month of April, by the Overseers of the Poor, subject to the approval of the Mayor and Aldermen, a physician, to be called the Assistant City Physician, who, under the direction of the Overseers of the Poor, shall act as the almshouse physician, and shall visit and prescribe for the sick poor in the city, outside of the almshouse. His salary shall be fixed by the City Council."

Also, by striking out the word "He," at the beginning of the third section, and inserting in place thereof the words, "The As-

sistant City Physician;" and the word "He," at the beginning of each subsequent section, shall be held to designate the Assistant City Physician only.

Also, by striking out the words "City Council" in the seventh section, and inserting in place thereof the words, "Overseers of the Poor."

Also, by striking out the eighth section.

[*Adopted Dec.* 27, 1882.]

An Ordinance in Amendment of an Ordinance in Relation to the Pay of City Laborers.

Section 11 of Chapter 1 of the Revised Ordinances is hereby amended by adding at the end thereof the words: —

"And provided further, that he shall, without action by the committee aforesaid, draw his order for the semi-monthly payment of the wages of the laborers employed in the Street Department; the amounts of such wages to be entered upon payrolls which shall be certified as correct by a majority of the Joint Standing Committee on Roads and Bridges; such amounts to be within the appropriation to which the same shall be chargeable."

[*Adopted Feb.* 19, 1883.]

An Ordinance in Relation to the Salaries of Certain City Officers.

Section 1. From and after the first day of February of the current year the salaries of the City Officers hereinafter named shall be as follows: —

Auditor of Accounts	$1,800 per year.
Treasurer of the Commissioners of the Sinking Funds	300 "
Clerk of Committees	2,000 "

Sect. 2. All Ordinances and parts of Ordinances inconsistent herewith are hereby repealed.

[*Adopted March* 19, 1883.]

An Ordinance in Relation to the Compensation of Members of the Fire Department.

SECTION 1. From and after February 1, 1883, the compensation of the members of the Fire Department shall be as follows:

CALL MEN.

Assistant Engineers, each	$325	per year
Foremen of Engine and Hook and Ladder Companies	194	"
Assistant Foremen of Engine and Hook and Ladder Companies	183	"
Members of Engine and Hook and Ladder Companies	172	"

PERMANENT MEN.

Engineers of Steam Fire-Engines	$90	per month.
Drivers of Steam Fire-Engines, Hook and Ladder Trucks, and Chemical Engine	75	"
Engineer of Chemical Engine	75	"
Fire-Alarm Telegraph Operator	90	"
Assistant " "	75	"

SECT. 2. All Ordinances and parts of Ordinances inconsistent herewith are hereby repealed.

[*Adopted March* 28, 1883.]

An Ordinance in Relation to the Salary of the City Messenger.

From and after the first day of April of the current year the salary of the City Messenger shall be at the rate of fifteen hundred dollars a year.

[*Adopted April* 9, 1883.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 25 of Chapter 39 of the Revised Ordinances is hereby amended, by striking out the word "fifteen" in the second paragraph, and inserting in place thereof the word "ten;" also, by inserting after the word "hydrant" the words "or reservoir."

[*Adopted April* 9, 1883.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 1 of Chapter 1 of the Revised City Ordinances, relating to the Auditor of Accounts, is hereby amended by inserting after the end of the first sentence, the following:—

"He shall give a bond in such a form as the City Solicitor shall approve, with sufficient sureties, to be approved by the Mayor and Aldermen, in a sum not less than ten thousand dollars, which bond shall be executed, approved, and delivered before he enters upon the duties of his office, and within ten days after his election. Should he fail to give such bond within the time herein required, the election shall be void, and a new election shall be had forthwith. In case of the death or insolvency of any of the sureties on any bond so given, the Auditor shall immediately give a new bond, with sufficient sureties, as hereinbefore provided; and, if he fails to give such new bond within a reasonable time after notice to do so, it shall be sufficient cause for his removal from office.

"*Provided, however*, that the first bond herein required shall be filed within ten days from the passage of this Ordinance."

[*Adopted April* 9, 1883.]

An Ordinance in Relation to Uniforms for the Permanent Men of the Fire Department.

SECTION 1. The permanent men of the Fire Department shall be required to furnish themselves with a suitable uniform, the same to consist of a cap, overcoat, undercoat, vest and pantaloons, and to be of such materials, quality of goods and pattern, as the Mayor and Aldermen may prescribe.

SECT. 2. This Ordinance shall take effect upon the first day of May, 1883.

[*Adopted April* 28, 1883.]

An Ordinance in Relation to the Compensation of Members of the Police Force.

From and after the 25th day of March, 1883, the compensation of the members of the Police Force hereinafter named shall be as follows:—

Captains	$1,150 per year.
Sergeants	$2.87½ per day.
Policemen, after two years of service . .	$2.75 per day.
Policemen, until two years of service . .	$2.50 per day.

[*Adopted May* 14, 1883.]

An Ordinance Repealing an Ordinance in Relation to the Salary of the City Physician.

An Ordinance entitled "An Ordinance in Relation to the Salary of the City Physician," adopted March 3d, 1880, is hereby repealed.

[*Adopted June* 11, 1883.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 11 of Chapter 1 of the Revised Ordinances, as amended February 19th, 1883, is hereby further amended by adding at the end of such amendment the words:—

"And *provided further*, that he shall, without action of the committee aforesaid, draw his order for the semi-monthly payment of the wages of the laborers employed upon the city ledge and house-offal wagons, and in the sewer department, the amounts of such wages to be entered upon pay-rolls, which shall be certified as correct, as follows: those of the laborers upon the city ledge and house-offal wagons, by a majority of the board of overseers of the poor, and those of the laborers in the sewer department by a majority of the committee on sewers, such amounts to be within the appropriation to which the same shall be chargeable.

[*Adopted July* 30, 1883.]

An Ordinance in Relation to the Salaries of the Assistant Assessors.

The salaries of the Assistant Assessors shall be at the rate of four dollars per day, for services rendered; the same to take effect as of the year 1883.

[*Adopted Sept.* 17, 1883.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Chapter 39 of the Revised Ordinances is hereby amended as follows:—

In Section 13, by striking out the word "June" and by inserting in place thereof the word "April."

In Section 15, by striking out the word "July" in the second and fourth lines, and inserting in place thereof the word "May."

In Section 16, by striking out the word "August" in the seventh line and inserting in place thereof the word "June."

In Section 20, Regulation 6, by inserting after the word "registrar" the words "while the person liable for the water-rates is in possession of the premises."

In Section 24, in the list of rates under the head of Dwelling Houses, by striking out the figures $22.00, $30.00 and $35.00, and inserting in place thereof, respectively, the figures $18.00, $26.00 and $31.00.

[*Adopted April* 9, 1884.]

An Ordinance in Relation to the Salary of the Inspector of Milk.

The salary of the Inspector of Milk shall be four hundred and twenty-five dollars per annum, the same to date from the first day of January, 1884.

[*Adopted April* 28, 1884.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 11 of Chapter 1 of the Revised Ordinances is hereby amended by striking out the amendments thereto respectively adopted Feb. 19, 1883, and July 30, 1883, and inserting in place thereof the following:—

And provided also that he shall, without action by the committee aforesaid, draw his order for the semi-monthly payment of the wages of all laborers employed in the various city departments,—the amounts of such wages to be entered in detail upon pay-rolls, which shall be properly certified by the board or committee, respectively, having control of the appropriation to which such amounts shall be chargeable.

[*Adopted May* 19, 1884.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 3 of Chapter 39 of the Revised Ordinances is hereby amended, by inserting in the eighth line thereof, after the word "Cambridge," the words "also by an Act of the said Legislature approved on the twenty-first day of May, A. D. 1884, entitled 'an Act to provide a further supply of water for the City of Cambridge.'"

[*Adopted July* 14, 1884.]

An Ordinance in Relation to the Salary of the Mayor.

From and after the first day of January, 1885, the salary of the Mayor shall be twenty-five hundred dollars per annum.

[*Adopted Sept.* 10, 1884.]

An Ordinance in Relation to the Salary of the City Engineer.

The salary of the City Engineer shall be three thousand dollars per annum,—to date from August 1, 1884.

[*Adopted Sept.* 10, 1884,]

An Ordinance in Relation to the Salary of the Superintendent of Lamps.

The salary of the Superintendant of Lamps shall be at the rate of six hundred and fifty dollars per annum, the same to take effect on the first day of September, 1884.

[*Adopted Nov.* 17, 1884.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 24 of Chapter 39 of the Revised Ordinances is hereby amended by inserting after the word "power" in the first line of the last paragraph the words "to prevent the erection of yard hydrants, and;"—so that the section will read, "The Board shall have power to prevent the erection of yard hydrants, and to establish such regulations as they may deem expedient," &c.

[*Adopted Dec.* 22, 1884.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 25 of Chapter 39 of the Revised Ordinances is hereby amended by striking out the words "and a half" from the third line of the second paragraph; making the charge for water used for watering streets at the rate of one cent per hundred gallons.

[*Adopted Feb.* 17, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 24 of Chapter 39 of the Revised Ordinances is hereby amended by striking out, at the end of the list of Water Rates, the words:

"Building Purposes: — For every cask of lime and cement used, six cents."

[*Adopted March* 24, 1885.]

An Ordinance in Relation to the Compensation of the Board of Assessors.

The compensation of the Board of Assessors shall be forty-five hundred dollars per year, to date from April 1, 1885,— and they shall devote their entire time to the duties of their office.

[*Adopted May* 8, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Section 33 of Chapter 36 of the Revised Ordinances is hereby amended by striking out the words "Chairman of the Committee" in the fifth line of said section, and inserting in place thereof the words "City Treasurer."

[*Adopted May* 8, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section Eleven of Chapter One of the Revised Ordinances, as amended July 30, 1883, is hereby further amended by adding the following paragraphs:

"And *provided further* that he shall without action by the Committee aforesaid, draw his order for the payment of the sums allowed as State and military aid, said sums to be entered upon pay-rolls, which shall be certified as correct by a majority of the Committee on Soldiers' Aid, and to be within the appropriation for State Aid.

"The City Treasurer shall pay all employés of the city, whose names are borne upon pay-rolls, either in person at the City Hall, or by sending a clerk or paymaster to pay such persons at the place where they are employed. He may also make the necessary arrangements for the transportation of such clerk or paymaster to the place aforesaid. The Mayor is hereby authorized to detail a police officer to accompany such paymaster while in the performance of his duty."

[*Adopted May* 19, 1885.]

An Ordinance in Relation to the Salary of the Assistant City Physician.

The salary of the Assistant City Physician shall be twelve hundred and fifty dollars a year, the same to take effect on the first day of July, 1885.

[*Adopted July* 14, 1885.]

An Ordinance in Relation to the Salary of the Chief Engineer of the Fire Department.

From and after the first day of June, 1885, the salary of the Chief Engineer of the Fire department shall be at the rate of fifteen hundred dollars a year.

[*Adopted July* 14, 1885.]

An Ordinance in Relation to the Salary of the Clerk of the Common Council.

From and after the first day of January in the year 1886, the salary of the Clerk of the Common Council, shall be at the rate of three hundred dollars a year.

[*Adopted Oct.* 20, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 11 of Chapter 1 of the Revised Ordinances, as amended May 19, 1884, is hereby amended by inserting after

the words "department," in the last paragraph of said Section, the words "and also the members of the Police Force and Fire Department, and the Janitors of Public Buildings."

[*Adopted Nov.* 10, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 8 of Chapter 1 of the Revised Ordinances is hereby amended by adding the following paragraphs:

"*Provided*, That no Committee, either of the Board of Aldermen or of the City Council, authorized to purchase materials or supplies, or to contract for labor to be performed, shall have the power to expend more than three hundred dollars for any one specific purpose, whether settlement for the same shall be made in one or more payments, unless specially empowered to make such expenditure by an order of the City Council, or of the Board of Aldermen in cases where that Board has sole jurisdiction.

"Every Committee authorized to purchase or contract to an amount exceeding the sum of three hundred dollars, shall, unless otherwise directed, advertise for proposals to furnish materials, supplies, or labor, and shall award the contract therefor to the lowest responsible bidder, unless such Committee shall deem it advisable to reject all proposals received and advertise anew."

[*Adopted Dec.* 16, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Streets

Section 14 of Chapter 36 of the Revised Ordinances, is hereby amended by adding at the end thereof, the following paragraphs:

"No person shall place upon any sidewalk any board or plank walk, without first obtaining a written license from the Mayor and Aldermen, or some person by them authorized for that purpose; and no walk laid under authority of such license shall be less than three feet in width, and the same shall be in sections of not more than twelve feet in length. The material used for such walks shall be of spruce, of not less than one and a quarter, nor more than two inches in thickness, and shall be planed to a uniform thickness upon the under side, and cross-tied at the length of

every three feet, with two by six-inch pine. Such walks shall be constructed in accordance with a plan in the office of the City Engineer, and shall be subject to the approval of the Standing Committee on Roads and Bridges of the Board of Aldermen, and the Superintendent of Streets, and may be removed by them whenever in their judgment they may deem that the public safety and convenience require such removal.

"*Provided*, that exceptions may be made in relation to the requirement concerning the width of plank walks, in cases where the sidewalk is too narrow to admit of the prescribed width, and in such cases the Standing Committee on Roads and Bridges, of the Board of Aldermen, shall be authorized to make and allow any necessary change.

"Plank walks, authorized as hereinbefore provided, shall be laid and kept in proper condition by the respective owners thereof, and the same shall be taken up by such owners during the spring months whenever the Committee aforesaid and the Superintendent of Streets shall so direct."

[*Adopted Dec.* 16, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Water Works.

Section 19 of Chapter 39 of the Revised Ordinances is hereby amended by striking out the entire section and inserting in place thereof the following:

"SECT. 19. No person shall injure any public pipe, reservoir or fire hydrant connected with the Water Works or shall break and enter the same, or draw off, or cause to be removed, any of the water therefrom; or shall turn on or off the water in any such water pipe, reservoir or fire hydrant, or shall make any opening or connection with such pipe, reservoir or fire hydrant, or remove the cover of any hydrant, except in case of fire, without the license or permit of the Water Board or by authority of the Mayor and Aldermen,—and then under the direction of the Superintendent of the Water Works, who shall provide competent men to perform the same; and the expense thereof shall be charged to the person or department applying for such license or permit."

[*Adopted Dec.* 23, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to the Cambridge Cemetery.

Sections 1 and 2 of Chapter 5 of the Revised Ordinances are hereby amended, by striking therefrom the word "*six*" wherever the same occurs, and inserting in its place the word "*four*."

[*Adopted Dec.* 30, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Section 16 of Chapter 36 of the Revised Ordinances is hereby amended by adding at the end thereof the following:—

Whenever any department of the City or any corporation, or person, shall lawfully make or authorize to be made, any opening, or cause any obstruction, in any street, lane, alley, sidewalk, or other public place, such department, corporation, or person, shall within one week from the time of making such opening or causing such obstruction, give notice thereof, in writing, to the Superintendent of Streets, and shall be held responsible for any damages that may result from such opening or obstruction for a period of six months from the time of making the same."

[*Adopted Dec.* 30, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 25 of Chapter 1 of the Revised Ordinances is hereby amended by striking out the word "two" in the third line, and inserting in place thereof the word "three."

[*Adopted Dec.* 30, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Chapter 1 of the Revised Ordinances is hereby amended by striking out the ninth, tenth, eleventh and twenty-first sections of said chapter, and inserting in place of said sections, respectively, the following:—

SECT. 9. The pay-rolls of city employés shall be made up to the first and fifteenth days of each month; and the pay-days at City Hall shall be on the tenth and twenty-fifth days of each month, except that in case either of said days occurs

on Sunday, or upon a legal holiday, then the next succeeding day shall be pay-day; and the several boards and committees above mentioned shall hold regular meetings on or before the fifth and twentieth days of each month for the examination and approval of bills. They shall keep a record of all contracts and obligations entered into by them, the dates of the same, with the names of the parties and the amounts of such contracts and obligations, when the same are known, and also of the names of the persons whose bills are approved, and of the dates and amounts of said bills. A majority of each of said boards and committees, except the school committee, shall certify, by their signatures upon such bills, their approval of the same, and pass them to the auditor on or before the mornings of the sixth and twenty-first days of each month. All bills approved by the school committee shall be certified by the secretary, and at least three members of that board. No bill shall be approved by any board or committee except at a meeting of which all the members have been notified, and at which there is a quorum present.

The chairman of the several committees shall furnish to the Committee on Accounts semi-monthly statements, as far as practicable, of the amount of all outstanding contracts and bills chargeable to their several appropriations, which statements shall be passed to the Auditor with the bills, and addressed to the Committee on Accounts.

COMMITTEE ON ACCOUNTS.

SECT. 10. There shall be appointed in the month of January annually a joint standing committee on accounts, to consist of two members of the board of aldermen and three members of the common council; which committee shall meet at least two days before each of the pay-days mentioned in the preceding section, and carefully examine all accounts and claims against the city which shall be laid before them by the auditor, and after comparing them with his record, shall allow and pass the same if found to be properly entered; but no bill shall be allowed or passed by said committee unless the same shall bear the written signatures of a majority of the board or committee (other than the school committee of which the certificate of the secretary

and three members at least shall be required) authorized on behalf of the city to make the contract, or cause the expenditure to be made; and when the committee on accounts has any doubt concerning the propriety of such bill or account, it shall return the same to the board or committee approving for explanation; and if not satisfactorily explained it shall be exhibited to the city council, with the objections, at the next meeting thereof for its consideration and final decision.

The committee on accounts shall direct the auditor and the treasurer and collector as to the manner in which the books, records, accounts and papers belonging to their several departments shall be kept.

PAYMENT OF MONEY.

SECT. 11. The Mayor is hereby authorized to draw orders on the Treasurer for the payment of all accounts and claims allowed and certified by the committee on accounts, as provided in the preceding sections, and no other; *provided, however*, he may, without action by the committee on accounts draw his order to pay any sum by way of advance on contracts made, or on work begun and not completed, upon being satisfied of the necessity therefor by a certificate signed by a majority of the committee controlling the expenditure, within the sum specially appropriated therefor by the City Council, or upon the express order of the City Council.

SECT. 21. Heads of departments shall furnish semi-monthly pay-rolls of employés in their respective departments, stating the name and residence of each employé, the time for which payment is to be made, the rate of wages, and the amount due him, and submit the same for approval to the proper board or committee named in section 7 of this chapter, on or before the fifth and twentieth days of each month; and the Treasurer shall in person, or by his clerk, make payment to such employé, his authorized agent or attorney; shall take therefor the receipt of no other person than such employé, agent or attorney. The City Treasurer shall pay all employés of the city whose names are borne upon pay-rolls, either in person at City Hall or by sending a clerk or pay-master to pay such persons at the place where they are employed. He may also make the necessary arrangements for the transportation of such clerk or pay-master to the place as aforesaid. The Mayor is hereby authorized to

detail a police officer to accompany such pay-master while in the performance of his duty.

All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

[*Adopted Dec.* 30, 1885.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

The Ordinance passed December 30, 1885, in amendment of chapter 1 of the Revised Ordinances is hereby amended by striking out the words, "Sect. 9. The pay-rolls of city employés shall be made up to the first and fifteenth days of each month," and inserting in place thereof the following words: "Sect. 9. The pay-rolls of city employés shall be made up the first and sixteenth days of each month."

[*Adopted Jan.* 26, 1886.]

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

The Ordinance in amendment of "An Ordinance in relation to Accounts and Finance," passed December 16, 1885, shall not be held to apply to the consumption of Water or Gas, nor to contracts made with such laborers or other persons as are ordinarily employed in the various departments, in the performance of the regular work or labor thereof, whether such contracts be by the day, month or year.

[*Adopted March* 10, 1886.]

An Ordinance in Relation to the Compensation of the Harbor Master.

The salary of the Harbor Master shall be at the rate of one hundred dollars a year, beginning on the first day of January in the current year.

[*Adopted April* 14, 1886.]

*** An Ordinance in Relation to the Boundaries of the Several Wards, and the Number of Members of the Common Council to be elected in each Ward.**

SECTION 1. The boundaries of the several wards shall, until the first day of May, in the year eighteen hundred and ninety-

* Section 1 repealed by Chapter 283 of the Acts of 1886.

six, continue the same as established by ordinance adopted on the twenty-fifth day of October, eighteen hundred and eighty-two, with the following exceptions : —

So much of the territory of Ward Two as lies northerly of Broad Canal and easterly of a line through the centre of the Boston & Albany branch railroad shall constitute a part of Ward Three, and so much of the territory of Ward Three as lies westerly of such line shall constitute a part of Ward Two; making the center of said railroad the boundary line between said wards from Broad Canal to the boundary line between Cambridge and Somerville.

Section 2. The members of the Common Council shall be apportioned as follows : Ward One shall elect FOUR ; Ward Two shall elect FIVE ; Ward Three shall elect FOUR ; Ward Four shall elect FIVE ; Ward Five shall elect TWO.

[*Adopted May* 26, 1886,]

An Ordinance in Amendment of an Ordinance in Relation to Sewers.

Section 4, of Chapter 32 of the Revised Ordinances is hereby amended by striking out the last clause of said Section, and inserting in place thereof the following : —

" Provided, however, that the Superintendent of Streets shall keep the entrances to the catch-basins open and clear of ice in cold weather, so as to permit the flow of surface water into them."

[*Adopted June* 3, 1886.]

An Ordinance in Amendment of an Ordinance in Relation to City Scales and Weighers.

Section 5, of Chapter 29, of the Revised Ordinances is hereby amended by inserting after the word " cents " in the eighth line, the words " *provided further* that the fees for weighing stone shall be ten cents for a single load, and fifteen cents for a double load."

As amended the section will stand as follows : —

SECTION 5. The fees for weighing to be received by the weighers, and by them paid to the Treasurer, as provided by the City Ordinances, shall be as follows, to wit : One cent and a

half for every hundred pounds of hay or straw; one-half of a cent for every hundred pounds of anthracite or other coal; and one cent for every hundred pounds of any other article: *provided, however*, that the fees for weighing any article other than hay or straw shall never be less than ten cents; and *provided further* that the fees for weighing stone shall be ten cents for a single load, and fifteen cents for a double load. The vehicle containing the same, and other tare, shall be weighed without charge, and no fees shall be taken for weighing done on account of the city.

[*Adopted Oct.* 6, 1886.]

An Ordinance in Amendment of an Ordinance in Relation to the Compensation of the Call Members of the Fire Department.

From and after the first day of January, 1887, the compensation of the call members of the Fire Department shall be as follows: —

Foremen of Companies	$220 00	per year.
Assistant Foremen of Companies	210 00	"
Members of Companies	200 00	"

All Ordinances and parts of Ordinance inconsistent herewith are hereby repealed.

[*Adopted Oct.* 6, 1886.]

An Ordinance in Amendment of an Ordinance in Relation to Sinking Funds.

Section 3, of Chapter 34 of the Revised Ordinances, in relation to sinking funds, is hereby amended by inserting in the fourth line before the word "twenty," the words "not exceeding."

Also, in the seventh line by striking out all after the word "issued."

As amended this section will stand as follows: —

"SECTION 3. All loans for public buildings, and lands therefor, for constructing and improving bridges, for taking, raising, and improving low lands, for laying out and paving streets, purchasing public lands and widening streets, shall be negotiated for ten years. All loans for constructing sewers and drains shall

be negotiated for not exceeding twenty years. Bonds issued for such loans shall bear upon the face the purpose for which they were issued."

[*Adopted Nov.* 27, 1887.]

An Ordinance in Relation to Weekly Payments.

Chapter I of the Revised Ordinances is hereby amended by striking out the ninth, tenth, eleventh and twenty-first sections of said chapter, and inserting in place of said sections, respectively, the following: —

SECTION 9. The pay-rolls of city employés shall be made up each Saturday for the whole week, including that day, and the pay days at City Hall for such employés shall be every Thursday, except in case such day occurs upon a legal holiday, when the next preceding day shall be the pay-day. Other pay-rolls shall be made up to include the last day of each month; and the pay-day for the same and for bills shall be on the tenth of each month, or the day following if such occurs on Sunday or a legal holiday; and the several Boards and Committees above mentioned shall hold regular meetings within the last seven days of each month for the examination and approval of bills, including pay-rolls certified as provided in Section 10 of this ordinance. Said Boards and Committees shall keep a record of all contracts and obligations entered into by them, the dates of the same, with the names of the parties and the amounts of such contracts and obligations, when the same are known; and also of the names of the persons whose bills are approved, and of the dates and amounts of said bills. A majority of each of said Boards and Committees, except the School Committee, shall certify, by their signatures upon such bills, their approval of the same, and pass them to the Auditor on or before the morning of the third day of each month. All bills approved by the School Committee shall be certified by the Secretary, and at least three members of that Board. No bill shall be approved by any board or committee except at a meeting of which all the members have been notified, and at which there is a quorum present.

The chairman of the several Committees shall furnish for the Committee on Accounts monthly statements, as far as practicable, of the amount of all outstanding contracts and bills chargea-

ble to their several appropriations, which statements shall be passed to the Auditor with the bills, and addressed to the Committee on Accounts.

COMMITTEE ON ACCOUNTS.

SECT. 10. There shall be appointed in the month of January annually, a Joint Standing Committee on Accounts, to consist of two members of the Board of Aldermen and three members of the Common Council; which Committee shall meet on or before the eighth day of each month, and carefully examine all accounts and claims against the city which shall be laid before them by the Auditor, and after comparing them with his record, shall allow and pass the same if found to be properly entered; but no bill shall be allowed or passed by said Committee unless the same shall bear the written signature of a majority of the Board or Committee (other than the School Committee, of which the certificate of the Secretary and three members at least shall be required), authorized on behalf of the city to make the contract, or cause the expenditures to be made, except the weekly payrolls, which shall bear the certificate of the head of the proper department as provided for by amendment to Section 11 of this Chapter; and when the Committee on Accounts has any doubt concerning the propriety or correctness of such bill or account, it shall return the same for explanation to the Board or Committee approving, when, if it be not satisfactorily explained, it shall, together with the objections thereto, be exhibited to the City Council at the next meeting thereof, for consideration and final decision.

The Committee on Accounts shall direct the Auditor, the Treasurer and Collector, and other officers of the city, and heads of departments, as to the manner in which the books, records, accounts and papers belonging to their several departments shall be kept.

PAYMENT OF MONEY.

SECT. 11. The Mayor is hereby authorized to draw orders on the Treasurer for the payment of all accounts and claims allowed and certified by the Committee on Accounts as provided in the preceding sections and no other; *provided*, *however*, he may,

without action by the Committee on Accounts draw his order to pay any sum not exceeding three-fourths of the amount then due, by way of advance on contracts made, or on work begun and not completed, upon being satisfied of the necessity therefor by a certificate signed by a majority of the committee controlling the expenditure, within the sum especially appropriated therefor by the City Council, or to draw his order for any sum upon the express order of the City Council.

And provided further that he shall, without action by either of said committees, draw his order for the weekly payment of the wages of such employés as are entitled by law to be paid weekly; the amounts of such wages as fixed by the committees having charge of the several appropriations to be entered upon pay-rolls which shall be certified to as correct by the heads of the respective departments; all such amounts to be within the appropriation to which the same shall be chargeable.

SECT. 21. Heads of departments shall furnish weekly pay-rolls of such employés in their respective departments as are entitled by law to be paid weekly, and shall furnish monthly pay-rolls for all other employés stating the name and residence of each employé, the time for which payment is to be made, the rate of wages, as fixed by the Committees having charge of the several appropriations and the amount due him, and the Treasurer shall in person, or by his clerk, make payment to such employé, his authorized agent or attorney, and shall take therefor the receipt of no other person than such employé, agent or attorney. The City Treasurer shall pay all employés of the city whose names are borne upon pay-rolls, either in person at City Hall or by sending a clerk or pay-master to pay such persons at the place where they are employed. He may also make the necessary arrangements for the transportation of such clerk or pay-master to the place as aforesaid. The Mayor is hereby authorized to detail a police officer to accompany such pay-master while in the performance of his duty.

All Ordinances and parts of Ordinances inconsistent herewith are hereby repealed.

[*Adopted Dec.* 1, 1886.]

An Ordinance in Relation to the Salaries of the Assistant Engineers of the Fire Department.

From and after the first day of January, 1887, the salaries of the Assistant Engineers of the Fire Department, shall be at the rate of Three Hundred and Seventy-five Dollars per annum, each.

[*Adopted Dec.* 9, 1886.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Section 21, of Chapter 36 of the Revised Ordinances is hereby amended by adding at the end thereof, the following: —

"No person shall deposit in any street, lane or alley, except as hereinafter provided, any dead shrubs or trees, trimmings of shrubs or trees, earth from cellars, or any similar rubbish, unless the same shall be immediately removed therefrom, at the expense of the owner, or other person making such deposit."

Provided, that during the months of April and October in each year, owners or occupants of premises, may, on twenty-four hours' notice to the Superintendent of Streets, obtain the removal of such dead shrubs and trees, or trimmings of shrubs and trees, as may have accumulated therein, the same to be deposited in the street against the sidewalk adjoining said premises.

Whoever desires the removal of ashes and other house dirt, not including house-offal, shall cause the same to be put in suitable boxes or barrels, and set upon the sidewalk adjoining his premises, and the Superintendent of Streets shall cause such removal to be made at least once in each week, on stated days for different portions of the city, but such boxes or barrels shall not be placed upon any sidewalk so as unnecessarily to prevent the convenient use thereof by foot passengers. Wherever there is a convenient driveway into a yard connected with any dwelling house, the Superintendent of Streets may at his convenience and upon reasonable notice, cause the city teams to be driven into such yard, and to remove therefrom the ashes and rubbish before mentioned that may be accumulated therein, at the times hereinbefore specified.

Any person having or leaving after dark any such ashes, rubbish or other refuse on any sidewalk, street, lane or alley, shall cause a lighted lantern to be kept thereon during the night.

Whoever shall be convicted of wilfully and maliciously tipping over and spilling out the contents of any boxes or barrels set upon the sidewalk in accordance with the provisions of this ordinance, shall be liable to a fine of not exceeding twenty dollars.

[*Adopted Dec.* 22, 1886.]

An Ordinance in Amendment of "an Ordinance in Relation to Weekly Payments."

The Ordinance in relation to weekly payments adopted Dec. 1, 1886, is hereby amended by adding at the end of Section 11 the following words: —

"And provided further that he shall, without action by the Committee on Accounts, draw his order for the payment of the salaries of the teachers of the public schools, and the sums due for State and Military aid; the amounts of such salaries to be entered upon pay-rolls which shall be certified to be correct by the School Committee, and the amounts of such sums for State and Military Aid to be entered upon pay-rolls which shall be certified to be correct by the Committee on Soldiers' Aid, all in the manner prescribed in Section 10; such amounts to be within the appropriation to which the same shall be chargeable."

[*Adopted Dec*, 29, 1886.]

An Ordinance in amendment of an Ordinance in Relation to Accounts and Finance. And an Ordinance in Relation to Fees of City Officers.

Section 6, of Chapter 1 of the Revised Ordinances is hereby amended by inserting after the word "description" in the seventh line the words: *He shall pay over to the Treasurer daily all moneys received by him on account of licenses or fees of any description.*

Section 10, of the amended Ordinance approved December 1, 1886, is hereby amended as follows: At the end of said section add the words — *and at the end of each financial year said Committee shall make a report to the City Council of the condition of all of said accounts and the manner in which they have been kept during the year just closed.*

Erase Section 13, of Chapter 1, and substitute therefor the following: —

SECTION 13. The various boards and city officers, who shall in their official capacity, receive any money on behalf of the city, whether for payment of fees for services rendered or otherwise, shall enter in a book kept for the purpose, a detailed record of all money so received, and the several purposes for which said money was paid, which book shall at all times be open to the inspection of the Committee on Accounts, and all such boards and city officers having offices in City Hall, shall pay to the City Treasurer daily all money so received, and all other boards and city officers shall pay over to said Treasurer weekly all money so received by them. All such boards and city officers shall, before making such payment, make a true return to the Auditor of Accounts, stating the account upon which said moneys were received. All other persons who shall at any time have money in their possession belonging to the city, shall forthwith pay the same to the City Treasurer.

Erase the word "*monthly*" from the seventh line of the third section of the fourteenth chapter and insert in the place thereof the word "*weekly*."

The section as amended will read as follows: —

SECTION 3. All fees, penalties, witness fees, moneys or compensation received by the Chief of Police or any member of the police force, other than the salary fixed by Ordinance, for any services rendered in their official capacity, except moneys or compensation received by them for special services, and except witness fees for testimony in courts without the limits of the city, shall be paid weekly into the City Treasury by the officer receiving the same; and the salary so paid by Ordinance shall be in full for all services rendered by the Chief of Police or any member of the police force, during their respective terms of office.

[*Adopted Dec*, 29, 1886.]

An Ordinance in Relation to the Employment of City Laborers.

No person who is not a resident of Cambridge shall be employed as a laborer in any department of the city; and in the employment of laborers in any department of the city prefer-

ence shall be given to efficient and steady man who have families or minor children dependent upon them for support; *provided*, that no competent and faithful laborer, who is a resident of Cambridge, shall be discharged to make place for another.

[*Adopted Dec.* 29, 1886.]

An Ordinance in Relation to the Inspection and Construction of Buildings, Adopted December 3, 1885, with Amendments to 1886 incorporated.

SECTION 1. The mayor and aldermen shall annually, during the month of January, appoint a superintendent of public buildings who shall be *ex officio* inspector of buildings.

He shall be an able and experienced architect, builder, or mechanic, and shall not be employed or engaged in any other business, or be interested in any contract for building or for furnishing materials.

He shall be removable for cause at the pleasure of the mayor and aldermen, and a vacancy may be filled at any time for the unexpired term. He shall receive such conpensation for his services as the city council may from time to time determine.

DUTIES OF THE SUPERINTENDENT OF PUBLIC BUILDINGS.

SECT. 2. The said superintendent, under the direction of the committee on public property, shall superintend the construction of all buildings erected by the city, and all repairs upon all city buildings, and see that the conditions of the contracts, and the plans and specifications, if any, are faithfully carried out.

SECT. 3. He shall, under the direction of said committee, have the care and custody of all the buildings belonging to the city; shall keep himself acquainted with their condition; shall employ suitable mechanics to make such alterations or repairs as may be ordered on the same; and in general, shall render such services in relation to such buildings as may be required of him by said committee.

SECT. 4. He shall keep an accurate record of all buildings belonging to the city and lands appurtenant to such buildings, and in the month of December in each year, he shall present to the city council a report in relation to the same, showing their condition and the nature and amount of expenditures that shall have been made upon them during the year next preceding, and

a statement of the nature and extent of the repairs that in his opinion should be made during the next succeeding twelve months, and an estimate of the probable cost of the same.

DUTIES OF THE INSPECTOR.

SECT. 5. In his capacity of inspector of buildings he shall examine all buildings in the course of erection, alteration or repair to ascertain if the ordinances of the city are being complied with, and he may require plans and specifications or a description of any proposed erection or alteration of any building, and shall grant permits for such erection or alteration when the plans and specifications or description are in conformity with the ordinances of the city and the laws of the state; he shall enter upon the premises wherein any fire has occurred to ascertain the origin of the fire, and keep a correct record of the business of the department, including all violations of the city ordinances relating to buildings, and shall submit to the city council in the month of December of each year a report of the department of building inspection for the preceding year.

SECT. 6. Upon being informed that any building is in a dangerous or unsafe condition, from damage by fire or accident, or from any other cause, he shall at once proceed to examine the same, and if in his judgment it is in a dangerous or unsafe condition, he shall forthwith notify in writing, the owner, agent, or any person having an interest therein to remove the same, or make it safe and secure, and he shall also notify the board of aldermen of the condition of such building, and shall generally perform such duties as may be required of him by the board of aldermen.

SECT. 7. The inspector shall examine all churches, halls, or other buildings or structures, used, or intended to be used temporarily or permanently, for any public use, and all school-houses or school-rooms, public or private, and buildings used, or intended to be used, for manufacturing purposes, and if he finds that any of said buildings or rooms are deficient in proper facilities of egress, in case of fire or accident, either in number, width, construction or arrangement of the entrances, aisles, passageways or stairways, or by reason of inner doors opening inward, or from any other cause whatever arising from the manner of construction, alteration or repair of the premises, he shall at once

notify the state inspector of factories and public buildings.

SECT. 8. Whenever it appears to the inspector that, in any of the buildings or structures, or portions thereof, mentioned in the foregoing section, the security of the public is temporarily endangered by the use of combustible stuff or materials; or that benches, chairs, stools, or other obstructions are temporarily placed in the aisles or passageways thereof in such a manner as to prevent free egress in case of fire or accident during the time when the same may be opened to the public; or that benches, chairs or settees are temporarily so arranged as not to afford proper egress in case of fire or accident; or that outer doors opening inward are not kept open when such buildings or structures are used by the public; then, and in either of said cases, the inspector shall notify the person for the time being having charge of the premises, and require such person at once to make the premises safe; and if he refuses or neglects so to do, he shall be liable to a penalty of not less than twenty or more than one hundred dollars for each offence, and the inspector shall remove the obstructions.

SECT. 9. All outer doors of buildings and structures mentioned in section seven of this ordinance shall be kept open when such buildings or structures are used by the public, unless such doors open outwards, and except that fly doors opening both ways may be kept closed. All inner doors of such buildings and structures shall be made so as to open outward, and said inspector is hereby authorized to enter any of such buildings or structures at all reasonable hours for the purpose of ascertaining whether or not any of the provisons of this ordinance are being violated.

SECT. 10. Whoever intends to erect, or make alterations in a building of any description, within ten feet of a public street of this city, shall, seven days at least before he proceeds to build, or erect the same, or lay the foundation thereof, or to make the said alterations, or to do any act for carrying into execution his intention to do such things, give to the inspector of buildings, notice in writing of his intention, with the dimensions of the structure proposed, the materials to be used, the number on the street, or the precise location, and the name of the owner or owners of the land, in order that any encroachment or other injury or inconvenience to the public streets, which might otherwise happen may be thereby prevented.

No work except necessary repairs, shall be done upon any wall, structure or building, without a permit from the inspector of buildings.

Every person before proceeding to erect any building, fence, or wall to be placed as specified in the first paragraph of this section shall first apply to the city engineer for the lines and grade of the street, lane, square or alley, upon which he intends to build; and the city engineer shall furnish the same without charge, if in his power to do so.

SECT. 11. The inspector shall not give a permit for the erection or alteration of any building until he has carefully inspected the plans, specifications or descriptions thereof, ascertained that the building has sufficient strength and that the means of ingress and egress are sufficient. A copy of the plans and specifications of every public building hereafter erected shall be deposited in the office of the inspector.

SECT. 12. The inspector shall designate, in every permit for the erection of a new building, the lowest grade at which the floor of the basement story of said building may be laid.

SECT. 13. The foundation walls of all dwelling houses to be hereafter erected shall be constructed of the dimensions, and in the manner following, viz:

For wooden houses not exceeding thirty-five feet in height, from the foundation to the top of the upper floor, said foundation walls, if made of rubble stone, shall be not less than sixteen inches thick at the top, and twenty inches thick at the bottom, (the slope to be upon the outside of the wall,) and shall be laid in mortar made of at least one part cement to three parts lime mixed with clean sharp sand in the proportions of at least one part of cement and lime to two parts sand; and if made of block stone laid in horizontal courses, or of bricks laid in cement upon stone levellers not less than twenty inches broad and twelve inches thick, said foundation walls shall be not less than sixteen inches thick, or twelve inches thick with buttresses not less than twelve inches wide, as often as once in ten feet, which shall project four inches at the top, and at the bottom a sufficient distance to give a batter of one in ten.

For wooden houses exceeding thirty-five feet in height from the foundation wall to the top of the upper floor, and for brick or stone houses having walls not exceeding twenty-five feet in

height above the foundation, the foundation walls shall be built in all respects the same as described in the preceding paragraph except that they shall be four inches thicker than called for in said paragraph.

The foundation walls of brick or stone houses having walls exceeding twenty-five feet, and not exceeding forty-five feet in height about the foundation walls, if built of rubble stone, shall be not less than twenty-four inches thick at the top, and thirty inches thick at the bottom, and shall be laid in mortar the same as provided in the second paragraph of this section; and if made of block stone in horizontal courses or of brick laid in cement, upon stone levellers not less than thirty inches broad and twelve inches thick, said foundation walls shall be not less than twenty inches thick.

The foundation walls of all brick or stone houses having exterior walls exceeding forty-five feet in height above said foundation walls, if made of rubble stone, shall be not less than thirty inches thick at the top, and thirty-six inches thick at the bottom, and shall be laid in mortar the same as provided in the second paragraph of this section; and if made of block stone laid in horizontal courses, or of brick laid in cement, upon stone levellers not less than thirty-six inches broad and sixteen inches thick, said foundation walls shall be not less than twenty-four inches thick.

SECT. 14. The foundation walls of all wooden buildings (other than dwelling houses) hereafter erected with external walls not exceeding thirty-five feet in height above the foundation walls, if made of common stone, shall be not less than twenty inches thick at the top and thirty inches thick at the bottom, (the slope to be upon the outside of the wall), and shall be laid in mortar the same as hereinbefore provided for the foundations of dwelling houses; and if laid of block stone in horizontal courses, or of brick, laid in cement upon stone levellers not less than thirty inches broad and twelve inches thick, they shall be not less than twenty-four inches thick. The foundation walls of all brick buildings of the height and description mentioned in this section, shall be four inches thicker than above stated.

SECT. 15. The foundation walls of all wooden buildings, (other than dwelling houses), hereafter erected with external walls exceeding thirty-five feet in height above the foundation

walls, if made of common stone, shall be not less than twenty-four inches thick at the top and thirty-four inches thick at the bottom, the slope to be upon the outside of the wall; and shall be laid in mortar the same as hereinbefore provided for the foundation walls of dwelling houses; and if made of block stone laid in horizontal courses, they shall be not less than twenty-eight inches thick. The foundation walls of all brick buildings of the height and description mentioned in this section shall be four inches thicker than above stated. All foundation walls shall be laid at least four inches below the bottom of the cellar.

SECT. 16. Whenever piles are required to be driven for a foundation, except as provided in the next section, they shall be of suitable stock, driven to a firm and solid bearing, and the tops shall be cut off on a level to insure constant immersion. There shall be not less than two rows under all external and party walls, and they shall be spaced not over three feet on centres in the direction of the length of the wall. All piles, except as provided in the next section, shall be capped with block-granite levellers, not less than sixteen inches thick, each stone to have a firm bearing on at least one pile in each row.

SECT. 17. Wooden structures not otherwise described herein for dwellings, manufacturing or business purposes, not exceeding two stories in height, may be built on stone or brick foundations, on piers or posts, each set on a hard bottom, but to a depth of not less than four feet below the surface of the ground, or on piles well driven to a hard bottom, said piers, posts and piles to be spaced not more than eight feet on centres; or on mud-sills, resting on cross-pieces of plank three inches or more in thickness, not less that four feet long and ten inches wide, placed at intervals of not more than ten feet on centres.

EXTERNAL WALLS.

SECT. 18. The external walls of all brick dwelling houses hereafter erected, if not more than twelve feet high above the foundation walls, shall be not less than eight inches thick for their entire height; if two stories and not more than twenty-five feet in height above the foundation walls, they shall be not less than twelve inches thick to the top of the second floor, and not less than eight inches thick for the remaining height; and if three stories and more than twenty-five feet in height, they shall

be not less than twelve inches thick to the top of the third floor and not less than eight inches thick for the remaining height.

SECT. 19. The external walls of all brick buildings, other than dwelling houses, to be hereafter erected in this city, if not more than thirty-five feet in height above the foundation walls, shall be not less than sixteen inches thick to the top of the upper floor, or for two-thirds of their height, and not less than twelve inches thick for the remaining height; and if more than thirty-five feet in height, they shall be not less than twenty inches thick to the top of the second floor, or for one-half their height, not less than sixteen inches thick to the top of the third floor, or three-fourths of their height, and not less than twelve inches thick for the remaining height.

Provided, however, that the external walls of brick buildings, not exceeding twenty-five feet in height, and covering an area not exceeding two thousand superficial feet, to be used for stables, or light mechanical purposes may be twelve inches thick.

SECT. 20. No buildings except manufactories, railway stations, stables, churches, school-houses, and halls for public assemblies, shall hereafter be erected, and no existing building shall hereafter be altered or added to, so that they shall extend in a range or have a frontage of more than fifty feet without at least one brick party-wall, not less than eight inches thick for its entire height, and extending from the bottom of the cellar, or from a foundation wall constructed as provided in section fourteen, to the under side of the roof boarding which shall be laid and be embedded in mortar upon said wall, and no existing building, having a range or frontage of more than fifty feet, shall be converted to a use not excepted by this section, without at least one brick party-wall, constructed as described in this section; *provided*, however, that any single dwelling house, intended for one family, may be extended more than fifty feet in one direction without such party-wall.

SECT. 21. No wooden building to be used for the purposes of a dwelling house, shall be built at a less distance than two feet from any other wooden building; and no wooden building heretofore erected and now used for other purposes than a dwelling house, any wall or portion of a wall of which, is within less than two feet of any other wooden building, shall be converted into or used for a dwelling house without the intervention of a brick

wall, where the united width of the two buildings exceeds forty feet; *provided*, that a wooden ell, not exceeding thirty feet in length, fifteen in width, or an equivalent number of feet in area, and not more than twenty-five feet in height, above the sill of the main building, may be built without the intervention of a brick wall between the said ell and the main building.

SECT. 22. Party walls of brick in all buildings, other than dwelling houses, hereafter to be erected in this city with external walls not exceeding thirty-five feet in height, shall be not less than sixteen inches thick to the top of the second floor and not less than twelve inches for the remaining height; and in buildings having external walls exceeding thirty-five feet in height, said party walls shall be not less than twenty inches thick to the top of the second floor, not less than sixteen inches thick to the top of the third floor, and not less than twelve inches thick for the remaining height.

SECT. 23. No opening or doorway shall be cut through or formed in a party wall of any building, without a permit from the inspector of buildings, and every such doorway shall have top, bottom and sides of stone, brick or iron, and shall be closed by two doors, or sets of doors, of wrought iron, or of wood covered with metal, with an air space between them of at least four inches, and said doors shall be hung in rabbeted iron frames, or in wooden frames entirely covered with metal, or to iron hinges in brick or stone rabbets.

PIERS AND COLUMNS.

SECT. 24. All piers shall be built of the best quality of good, well burnt hard brick, laid in cement and sand mortar, and well wet when laid in warm weather. Brick piers under lintels, girders or columns of brick buildings shall have a cap iron at least two inches thick, the full size of the pier. Brick piers and buttresses shall be bonded with through courses, levelled and bedded, each course, and where their foundations rest upon piles, a sufficient number shall be driven to insure a proper support.

SECT. 25. Every metal column in a brick building shall rest on an iron plate of not less thickness than two inches. Wooden columns supporting girders and floors in such buildings shall rest on inch and a half iron plates with sockets to receive the foot of the columns. Metal columns placed one on the top of another

shall have a plate at the top of each column, with projections on both sides to fit into cap and base of columns, to prevent slipping; and all columns shall have holes bored, where directed by the inspector, into and through the shell at right angles to the shaft, so as to show the thickness of shell. All bearing parts of columns and plates shall be turned or planed to true surfaces.

GRADE OF CELLARS AND BASEMENTS.

SECT. 26. No cellar or basement cellar of any building shall be constructed below the grade of thirteen feet above mean low water; *provided*, *however*, that the board of aldermen may, by license, subject to revocation at any time by them, authorize cellars or basement cellars to be constructed in buildings, no part of which is to be used as a dwelling, so much below said grade as they may designate in such license.

SECT. 27. All buildings built upon filled or made land shall have a bed of concrete, of hydraulic cement and gravel, or tar and gravel, or asphalt, not less than two inches in thickness, spread over the cellar bottom, or shall be paved with brick laid in cement, throughout the whole extent of the building; and where there is a basement floor over the cellar bottom, with an air space between the concrete and said floor, the air space shall be properly ventilated.

CONDUCTING WATER FROM ROOFS OF BUILDINGS.

SECT. 28. All buildings hereafter erected within eight feet of any street or travelled way, shall be provided with suitable leaders for conducting the water from the roof to the ground, and in no case shall such water be allowed to flow upon or across the surface of the sidewalk to the street, gutter or sewer.

BONDING OF WALLS.

SECT. 29. In every brick wall in buildings hereafter erected, every ninth course of brick shall be a heading course, except in walls built with some bond in which as much as every ninth course is a heading course, and except where walls are faced with face-brick, in which case every ninth course shall be bonded with Flemish headers, or by cutting the course of the face-brick, and putting in diagonal headers behind the same, or by splitting face-brick in half and backing the same by a continuous row of headers. The front, rear, side, end and party walls

of all brick buildings hereafter erected shall be anchored to each other every ten feet in their height by tie-anchors, made of at least one and a quarter inch by three-eighths of an inch wrought iron.

All walls of a brick building, on which the ends of beams rest, shall be anchored at each tier of beams, at intervals of not more than ten feet apart, with good, strong, wrought-iron anchors at least three-eighths inch by one and one-quarter inch, well built into the walls and fastened at the top of the beams; and where the beams are supported by girders, the ends of the beams resting on the girders shall be butted together, end to end, and strapped by wrought-iron straps or tie-irons, at the same distances apart, and in the same beams as the wall anchors, and shall be well fastened.

TIMBERING OF FLOORS.

SECT. 30. All floors shall be constructed to bear a safe weight, per superficial foot, exclusive of materials, as follows: For dwellings, tenements or lodging houses, one hundred pounds; for buildings for light mechanical purposes, and for public buildings, one hundred and fifty pounds; for storehouses, warehouses, machine shops, armories, drill rooms and riding schools, not less than two hundred and fifty pounds. These requirements shall apply to all alterations, as well as to new buildings.

SECT. 31. Every header more than four feet long, used in any building except a dwelling, shall be hung in stirrup irons, of suitable dimensions for the size of the timbers, and securely joint bolted. All tail beams shall be properly framed or hung to headers.

SECT. 32. The ends of all floor beams and rafters of a brick building entering a wall shall be cut on a splay of three inches in their width.

SECT. 33. No floor timber, header or trimmer of a brick building shall be cut into more than two inches in depth for piping, without a permit from the inspector, and no cutting shall be made in any timber at a greater distance than three feet from its support.

CHIMNEYS AND HEATING APPARATUS.

SECT. 34. All chimneys hereafter erected shall be built from the ground, of brick, stone or other fire-proof non-

conducting materials, and shall be built plumb, or nearly so, so as to be self-sustaining; *provided*, however, that brick flues may be securely built into the brick work of the walls of the building to which they are hung, when the walls are not less than twelve inches thick; *and provided also*, that upon special permission, first obtained from the board of aldermen, chimneys may be built upon cast iron or hard pine columns set upon iron plates at least one and one-half inches thick with sockets and capped at their upper ends with a metal plate at least two inches thick and not more than two inches shorter upon either side than the corresponding sides of the chimney; or upon permission being obtained as above, chimneys may be built upon a flooring of masonry supported by iron beams, which have secure bearings on masonry or iron at each end, the same to be constructed in all respects to the satisfaction of the inspector of buildings; *and provided also*, that the matter of the construction of chimneys in small wooden buildings, other than dwelling houses, not more than one story and a half in height shall be left to the decision of the inspector of buildings, but must be constructed in accordance with his instructions and to his satisfaction.

SECT. 35. All brick chimney-flues shall be smoothly plastered inside with mortar from top to bottom, during the course of construction, and also outside below the roofing after having been examined and approved by the inspector of buildings; except that exposed portions of said chimneys when the walls of the flues are eight inches thick may be left unplastered upon the outside. Said chimneys shall be topped out with brick or stone, laid in cement, and the topping out shall not have more than two inches, projection, unless the bricks are covered by a cap of stone or other non-combustible material in one piece, properly secured, and approved by the inspector; and in no case shall a nail be driven into the masonry of any flue.

SECT. 36. The shell of all flues for boilers, ovens, and ranges set in brick, shall hereafter be of brick work eight inches thick, or its equivalent, to the top of the first floor above said boilers, ovens, or ranges. Ranges set in brick and boilers shall have the outside of their flues exposed without covering, except by plastering directly upon the bricks, up to the ceiling of the room, and no wood work shall be placed on the outside of the same.

SECT. 37. No wood work of any kind, except the roof covering, shall be placed at a less distance than one inch from the outside of the brick work of any flue. No wood work shall be placed at a less distance than one inch from any tin or other metal flue or pipe used or intended to be used to convey heated air, hot water or steam in any building, unless such flue or pipe be cased with a metal sleeve of larger diameter than said flue or pipe, so as to permit a free circulation of air all around the same.

SECT. 38. No soft bricks shall hereafter be used in the construction of any wall, chimney, or flue referred to in this ordinance.

SECT. 39. No smoke-pipe in any building with wooden or combustible floors or ceilings shall hereafter enter any flue, except at a distance not less than twelve inches from said floor, or ceiling; and in all cases where smoke-pipes pass through stud or wooden partitions of any kind, whether the same be plastered or not, they shall be guarded by a soapstone ring having a thickness radial to said pipe of not less than two inches, and extending through said partition, and in cases where smoke-pipes pass through wood work of any kind in such near proximity to the brick work of the flue that the space between said wood work and flue is inaccessible, said pipe shall be guarded by a soapstone ring or thimble, or its equivalent, having a thickness of at least two inches, and extending from the outer face of said wood work to a point at least two inches within the brick work of the flue in which it shall be firmly set.

SECT. 40. All hearths shall be supported upon trimmer arches of brick or stone, or upon bars of iron supporting a bed of brick work and shall be at least twelve inches longer than the width of the fireplace openings and at least eighteen inches wide in front of the chimney breast.

SECT. 41. No furnace, or range set in masonry shall hereafter be placed, or its location changed in any building, without a permit from the inspector of buildings, who shall prescribe such regulation for the setting or placing thereof as in his judgment the public safety may require.

SECT. 42. The top of every heating furnace not set in brick shall be kept at least six inches below the beams or ceiling, with a shield of tin plate, made tight, suspended not less than two inches below the said beams or ceiling, and extending at least

one foot beyond the top of the furnace on all sides. If the furnace is set in brick and the ceiling is plastered, or the beams are covered with metal, the top of the brick work may be kept within not less than six inches of the ceiling or beams without the intervention of the tin plate shield.

SECT. 43. No steam heating apparatus shall be placed in any dwelling house now or hereafter built without a permit from the inspector of buildings, who shall prescribe such regulations for the setting or placing of the same as in his judgment the public safety may require.

SECT. 44. No furnace for melting iron or making glass, and no stationary steam engine or steam boiler to be used for mechanical purposes and in which any other fuel than coal is used or to be used shall be hereafter erected or put up to be used without a license first obtained from the board of aldermen, and in no case shall a stationary engine propelled by steam or other motive power be hereafter erected or put up for use within five hundred feet of a dwelling house or public building unless a license therefor has first been obtained from the board of aldermen, and upon the granting of such a license in either of the cases referred to in this section, the person or persons receiving it shall, before setting, erecting or placing said boiler, engine or furnace, obtain a permit from the inspector of buildings, who shall prescribe such regulations for the setting or placing thereof as in his judgment the public safety may require.

SECT. 45. No smoke pipe or flue shall project through any external wall or through any window, door or other opening in said wall.

SECT. 46. All floor timbers, headers and trimmers of every brick building hereafter erected, or altered, in which a chimney is built in a brick wall, shall be placed distant at least two inches from the outside of every chimney flue, and the space between such timbers and the brick work of the chimney shall be closed by a proper fire stop of incombustible material.

SECT. 47. If any chimney, flue or heating apparatus on any premises, in the opinion of the inspector, endangers the premises, he shall at once notify in writing the owner or agent of such premises. If such owner or agent fails to commence to make such chimney, flue or heating apparatus safe by 12 o'clock noon of the day following the service of such notice, and diligently

prosecuting the work to completion, he shall be subject to a fine of not less than ten dollars nor more than fifty dollars.

SECT. 48. No boiler to be used for steam motive power, and no furnace for melting metal or making glass, shall be placed on any floor above the cellar or basement, unless the same is set upon masonry built up from the ground, or upon iron beams supported upon masonry, and all wood work and timbers shall be removed from the floor under the same; *provided*, however, that furnaces for melting such metals only as fuse at a temperature not exceeding eight hundred degrees Fahrenheit, and that are connected with the chimney by a sheet metal pipe exposed to view, may be placed upon hollow brick or stone hearths, supported by the wooden floor of the first story or basement, the air spaces in which hearths shall be not less than three inches in perpendicular height, and connected by suitable air passages, with the atmosphere of the room.

HOT AIR REGISTERS.

SECT. 49. All hot air register boxes hereafter placed in the floors or partitions of buildings shall be set in soapstone borders not less than two inches in width, firmly set in plaster of Paris or gauged mortar, or in such other protection as shall in the judgment of the inspector be equivalent to soapstone; shall be made of tin plate with a flange on the top to fit the rabbet in the soapstone, and shall have an open space of one inch on all sides extending from the under side of the ceiling below the register, or the back side of the partition to the soapstone in the floor or partition; the outside of said space to be covered with a casing of tin plate, tight on all sides and extending from the under side of said ceiling or back side of said partition, to and turn under the said soapstone; but register boxes of fifteen by twenty-five inches or more in size shall have a space as above of two inches.

FIRE GUARDS.

SECT. 50. The insides of all furred brick walls of every brick building hereafter erected shall have a fire belt or stop, composed of some fire-proof material, at least six inches wide and thoroughly set up between furrings at the top and bottom of each floor and in each story, in which stud walls or partitions are con-

structed, and rest on walls or other partitions; said stud walls and partitions shall have the spaces between the floor joists immediately under such walls or partitions, and between studs from the undersides of said floor joists to a line six inches above the tops of said joists filled solid and flush with the plastering on both sides with mortar, cement, plaster or other incombustible material; and if such studs or partitions shall rest upon solid timber or joists for the whole length thereof, such filling as above described shall be placed from the top of such timber or joists to the same height as above specified; or a strip of tin or galvanized iron, at least one inch wider than the width of said studding, and continuing under the footing of said walls or partitions, may be substituted for the filling above specified, where there is no partition or wall beneath. The exterior and interior walls of all wooden buildings hereafter erected, shall have the space between the studding at the top and bottom of each story divided or separated by a fire stop so as to check effectually the draft from one story to another and from the vertical spaces in the walls to the horizontal passages between the floor timbers. The spaces between stringers or carriages of all wooden staircases, unless said stringers or carriages are left exposed, shall be closed at intervals not exceeding three feet by substantial stops of incombustible material.

SECT. 51. The various forms of construction tending to create or form air passages from one story to another, such as spaces around pipes, ventilating shafts, or chimneys furred off to form breasts, in every building hereafter erected or altered, shall have a fire and smoke stop at each floor, approved by the inspector, which fire and smoke stop in all brick buildings shall be of incombustible material. All ventilation ducts shall be of incombustible materials.

SECT. 52. No bay-window balcony shall be built upon the front wall of any building, so as to project over the line of the street, without a special license therefor from the board of aldermen.

SECT. 53. Whenever any person is about to erect or alter the exterior walls of a building, within five feet of the line of a travelled street, he shall cause the portion of the site of the building bordering upon the street, to be enclosed by a proper fence not less than four feet high, and at least five feet from the line of such building; and if such fence prevents passage on the

sidewalk, shall lay and maintain a plank walk around the same not less than twenty-four inches wide; and the fence shall be made as much higher and the walk as much wider as the inspector of buildings shall direct, and the same shall be maintained until all liability to accident from falling materials ceases. No person shall erect, or continue when erected, any staging in any highway, for the purpose of repairing or erecting a building without first obtaining permission from the inspector of buildings, and all such staging shall be so erected and secured as to be safe and sufficient for the purpose for which it was erected. In erecting any building, no person shall place, deposit or suffer to remain in any street or highway, any lumber or other building material, rubbish or remains of any old building, for a longer period than may be necessary for the prosecution of the work which may be going on; and in case such material, rubbish or remains of an old building shall necessarily remain after dark, a sufficient light shall be placed over or near the same, and kept from sunset to sunrise. All rubbish from the erecting or repairing of any building, or the removal of an old building, shall be carried away by the person so erecting or repairing such building at such time as the surveyors of highways may direct; and in case of neglect or refusal so to do, it shall be removed by the surveyors of highways at the expense of such person. Any person violating any provision of this section shall pay a fine of five dollars.

SNOW GUARDS ON ROOFS.

SECT. 54. Every building hereafter erected upon the line, or within five feet of the line of any street, square, court, place or other travelled way, and having a slated pitch roof sloping towards said street, square, court, place or travelled way, shall be provided with suitable snow barriers or guards upon said roof to prevent the snow sliding therefrom, the same to be constructed and applied to the satisfaction of the inspector of buildings.

PLUMBING AND HOUSE DRAINAGE.

SECT. 55. No person shall carry on the business of plumbing in this city, unless he first registers his name and place of business in the office of the inspector of buildings, and notice of any

change in the place of business of a registered plumber shall be immediately given to the inspector.

SECT. 56. On every street provided with a common sewer the sewage from each building on said street shall be conducted into such sewer.

SECT. 57. That portion of the house drain which is outside of the building and more than four feet from the foundation walls shall be constructed of iron pipe or vitrified drain pipe.

SECT. 58. That portion of the drain pipe outside or under the building and within four feet of the foundation walls, together with the soil pipe, shall be constructed of cast iron with leaded joints. The waste pipe connected with the conductors from the roofs, and other pipes inside the building or outside and within four feet of the foundation walls, shall be constructed of iron with leaded joints.

SECT. 59. The house drain and other pipes for the conveyance of sewage shall be laid with uniform grade and with a fall of not less than one inch in four feet, except in those cases where the city engineer may otherwise permit.

SECT. 60. The main house drain shall be provided with a trap with a suitable clean-out, which shall be located either outside or inside the foundation walls of the building and beyond all house connections. All pipes connecting a water-closet with a soil pipe shall be trapped, each separately and close to the connection of each water-closet. All waste pipe shall be trapped, each separately, and close to the connection with each bath, sink, bowl or other fixtures.

SECT. 61. All soil pipes shall be carried at their full size through the roof and left open. A provision shall also be made for admitting air to the house drain, side of the main trap.

SECT. 62. Waste pipes from refrigerators or other receptacles in which provisions are stored, shall not be connected with a drain, soil pipe or other waste pipe.

SECT. 63. The joints in the vitrified pipe shall be carefully cemented, under and around the pipe, and the joints in the cast iron pipe shall be run and calked with lead.

SECT. 64. All changes in direction shall be made with curved pipes, and all connections shall be made with Y branch pipes.

SECT. 65. All joints and pipes shall be made air tight. Connections of lead pipe with iron pipe shall be made with brass

ferrules, properly soldered and calked to the iron. The whole work to be executed by skilful mechanics in a thorough and workmanlike manner, and satisfactory to the board of health.

SECT. 66. No steam-exhaust shall be connected with any soil or waste pipe, or drain which communicates with a public sewer.

SECT. 67. All drains now built shall be reconstructed, whenever in the opinion of the Board of Health, it may be necessary.

SECT. 68. In the construction of this ordinance the following terms shall have the respective meanings hereinafter assigned them:

"Foundation wall" shall apply to that part of the outer wall of a building, other than a party wall, below the level of the ground outside said wall.

"External wall" shall apply to that part of the outer wall of a building, other than a party wall, above the foundation wall.

"Party wall" shall apply to every wall used or built as a separation of any building from any other building, or of any dwelling house from any other dwelling house.

"First floor," "second floor," and "third floor" shall be understood to mean respectively the first floor, second floor, and third floor above the cellar or basement.

The thickness of walls required by this ordinance shall be understood to apply in every case to solid masonry, exclusive of any air space.

"Chimney" shall apply to any permanent or fixed flues or passages, built into any building for conveying away the products of combustion from furnaces, stoves, boilers, ranges or fire-places.

SECT. 69. Whoever violates any provision of this ordinance shall be liable to a penalty of not more than fifty dollars, unless another penalty is specifically provided herein.

SECT. 70. The provisions of this ordinance shall not apply to buildings and structures owned or occupied by the United States or by the state of Massachusetts, nor to bridges, quays, and wharves.

SECT. 71. Chapter three of the revised ordinances is hereby repealed.

An Ordinance in Relation to the Salary of the City Clerk.

From and after the first day of January, 1887, the salary of the City Clerk shall be at the rate of twenty-eight hundred dollars a year, which sum shall be inclusive of all fees received by

him for Dog Licenses, of his compensation for services as a member of the Board of Registrars of Voters, or in any other capacity, either under the provisions of the Ordinances of the City or of the Statutes of the Commonwealth.

He shall give to the City an official bond, with sufficient sureties, in the sum of Three Thousand Dollars, in such form as shall be satisfactory to the City Solicitor, and subject to the approval of the Mayor and Aldermen, which bond shall be executed, approved and delivered before he enters upon the duties of his office, and within ten days of his election. Should he fail to give such bond within the time herein required, the election shall be void, and a new election shall be held forthwith.

In case of the death or insolvency of any of the sureties upon any bond so given, the City Clerk shall immediately give a new bond, with sufficient sureties, as hereinbefore provided, and if he fails to give such new bond within a reasonable time after notice to do so, it shall be sufficient cause for his removal from office.

Provided, however, that the first bond herein required shall be filed within ten days from the passage of this Ordinance.

[*Adopted Jan.* 12, 1887.]

An Ordinance in Relation to the Salary of the Assistant City Clerk.

From and after the first day of January, 1887, the Salary of the Assistant City Clerk shall be at the rate of One Thousand Dollars a year.

[*Adopted Jan.* 12, 1887.]

An Ordinance in Amendment of an Ordinance in Relation to the Salary of the Assistant City Clerk.

The Ordinance entitled "An Ordinance in relation to the salary of the Assistant City Clerk," adopted January 12, 1887, is hereby amended by adding thereto the following paragraph: —

"He shall give a bond in such a form as the City Solicitor shall approve, with sufficient sureties, to be approved by the Mayor and Aldermen, in a sum not less than Three Thousand Dollars, which bond shall be executed, approved and delivered before he enters upon the duties of his office, and within ten

days after his election. Should he fail to give such bond within the time herein required the election shall be void, and a new election shall be had forthwith, In case of the death or insolvency of any of the sureties on any bond so given, he shall immediately give a new bond, with sufficient sureties, as hereinbefore provided; and, if he fails to give such new bond within a reasonable time after notice to do so, it shall be sufficient cause for his removal from office.

"*Provided, however*, that the first bond herein required, shall be filed within ten days from the passage of this Ordinance."

[*Adopted Jan.* 19, 1887.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Chapter 36 of the Revised Ordinances in relation to streets is hereby amended by the addition of two sections, as follow: —

SECTION 37. No street railway corporation shall run snow plows or remove snow from its tracks in the streets of the city, unless it removes from such streets, outside of its tracks and between its rails and the sidewalks, an amount of snow sufficient to make such streets safe and convenient for public travel: and all removal of snow from the streets by such corporation shall be done under the direction and to the satisfaction of the Superintendent of Streets.

SECTION 38. No street railway corporation shall, for the purpose of melting snow on its tracks or rails, sprinkle any salt or other article of a decomposing nature thereon, or cause or allow such sprinkling to be done by any of its agents; nor shall it for such purpose wash its tracks or rails or cause them to be washed by any of its agents, with brine or pickle, except by the written permission of the Superintendent of Streets. Whoever violates the provisions of this section shall forfeit and pay to the use of the City of Cambridge the sum of twenty dollars.

[*Adopted Jan.* 19, 1887.]

MAYORS

OF

THE CITY OF CAMBRIDGE.

FROM 1846 to 1887.

James D. Green . . .	from May,	1846,	to April,	1848.
Sidney Willard . . .	" April,	1848,	to April,	1851.
George Stevens . . .	" April,	1851,	to April,	1853.
James D. Green . . .	" April,	1853,	to April,	1854.
[1]Abraham Edwards .	" April,	1854,	to January,	1855.
Zebina L. Raymond . .	" January,	1855,	to January,	1856.
John Sargent	" January,	1856,	to January,	1860.
[2]James D. Green . .	" January,	1860,	to July 24,	1861.
[3]Charles Theo. Russell	" July 31,	1861,	to January,	1863.
George C. Richardson	" January,	1863,	to January,	1864.
Zebina L. Raymond .	" January,	1864,	to January,	1865.
J. Warren Merrill .	" January,	1865,	to January,	1867.
Ezra Parmenter . .	" January,	1867,	to January,	1868.
Charles H. Saunders	" January,	1868,	to January,	1870.
Hamlin R. Harding .	" January,	1870,	to January,	1872.
Henry O. Houghton .	" January,	1872,	to January,	1873.
Isaac Bradford . . .	" January,	1873,	to January,	1877.
Frank A. Allen . . .	" January,	1877,	to January,	1878.
Samuel L. Montague .	" January,	1878,	to January,	1880.
James M. W. Hall . .	" January,	1880,	to January,	1881.
James A. Fox	" January,	1881,	to January,	1885.
William E. Russell .	" January,	1885.	Now in office.	

---

1 Municipal year changed. 2 resigned.
3 First elected by the City Council.

GOVERNMENT

OF

THE CITY OF CAMBRIDGE.

1887.

MAYOR.

HON. WILLIAM E. RUSSELL.

ALDERMEN.

JOSEPH A. BALL,
EDWARD R. COGSWELL,
JOHN W. COVENEY,
DANIEL E. FRASIER,
EDWARD W. HINCKS,
FRED. H. HOLTON,
WILLIAM E. HUTCHINS,
JOSEPH J. KELLEY,
P. ALLEN LINDSEY,
CHAS. F. STRATTON.

Aldermen, by Wards.

Ward 1. Aldermen COGSWELL and HINCKS.
" 2. " HOLTON and LINDSEY.
" 3. " COVENEY and KELLEY.
" 4. " BALL and FRASIER.
" 5. " HUTCHINS and STRATTON.

Clerk.

WALTER W. PIKE.

COMMON COUNCIL.

JOHN H. CORCORAN, *President.*

EDWARD A. BINGHAM,
PATRICK J. CALLAHAN,
JOHN H. CORCORAN,
PATRICK H. DECOURCY,
OLIVER H. DURRELL,
WILLIAM H. EVELETH,
FRANCIS FITZPATRICK,
FRANKLIN W. HAYNES,
THOMAS HOULLAHAN,
WARREN IVERS,
JAMES MCDONNELL,
JAMES H. MCPECK,
ALEXANDER MILLAN,
CHESTER F. SANGER,
WM. S. SHANNON,
ALVIN F. SORTWELL,
FRANK H. TEELE,
JAMES E. TRACY,
WESTON W. WALKER,
CHARLES WAUGH.

Common Council, by Wards.

Ward 1. Messrs. EVELETH, IVERS, MCDONNELL and MILLAN.
" 2. Messrs. DURRELL, HOULLAHAN, MCPECK, SORTWELL and TEELE.
" 3. Messrs. CALLAHAN, DECOURCY, FITZPATRICK and SHANNON.
" 4. Messrs. BINGHAM, CORCORAN, HAYNES, WALKER and WAUGH.
" 5. Messrs. SANGER and TRACY.

Clerk.

EDWARD N. MANNING.

Page.

WILLIAM LOCKLIN.

CITY CLERK.

WALTER W. PIKE.

ASSISTANT CITY CLERK.

EDWARD J. BRANDON.

CITY MESSENGER.

FRANCIS L. PRATT.

COMMITTEES OF THE CITY COUNCIL.

Joint Standing Committees.

Accounts.—*Aldermen* BALL and STRATTON; *Councilmen* TEELE, WALKER and TRACY.

Almshouse.—*Aldermen* KELLEY and STRATTON; *Councilmen* TRACY, HAYNES and EVELETH.

Assessors' Department.—*Alderman* HOLTON; *Councilmen* FITZPATRICK and BINGHAM.

City Engineering.—*Aldermen* STRATTON and KELLEY; *Councilmen* IVERS, HOULLAHAN and WAUGH.

Claims.—The MAYOR, and *Aldermen* KELLEY, HUTCHINS and LINDSEY; the PRESIDENT, and *Councilmen* FITZPATRICK, DURRELL, WALKER, MILLAN and SANGER.

Finance.—The MAYOR, and *Aldermen* COGSWELL, BALL and COVENEY, the PRESIDENT, and *Councilmen* SORTWELL, IVERS, DECOURCY, DURRELL and SANGER.

Fire Department.—*Aldermen* COVENEY and LINDSEY; *Councilmen* EVELETH, MCPECK and HAYNES.

Fuel.—*Aldermen* LINDSEY and FRASIER; and *Councilmen* MCDONNELL, WAUGH and CALLAHAN.

Health.—*Aldermen* COGSWELL and HOLTON; *Councilmen* MCPECK, BINGHAM and SHANNON.

Lamps.—*Aldermen* HINCKS and HOLTON; *Councilmen* TEELE, DE COURCY and BINGHAM.

Ordinances.—*Aldermen* LINDSEY and HUTCHINS; *Councilmen* SANGER, HOULLAHAN and SHANNON.

Printing.—*Aldermen* FRASIER and LINDSEY; *Councilmen* HOULLAHAN, MILLAN and CALLAHAN.

Public Instruction.—*Aldermen* HINCKS and HOLTON; the PRESIDENT, and *Councilmen* DURRELL, TRACY and HAYNES.

Public Property.—*Aldermen* COGSWELL and FRASIER; *Councilmen* IVERS, FITZPATRICK and TEELE.

Roads and Bridges.—*Aldermen* HINCKS and COVENEY; *Councilmen* SORTWELL, WAUGH and TRACY.

Water Supply.—*Aldermen* KELLEY and HUTCHINS; *Councilmen* TEELE, MCDONNELL and SHANNON.

Special Committees of the City Council.

Legislative Matters.—*Aldermen* HINCKS and KELLEY; *Councilmen* BINGHAM, SORTWELL and SANGER.

New Bridge.—*Aldermen* BALL, COVENEY and HUTCHINS; *Councilmen* FITZPATRICK, DURRELL, WALKER, MCDONNELL and TRACY.

Standing Committees of the Mayor and Aldermen.

Bonds.—*Aldermen* HUTCHINS, STRATTON and BALL.

Claims.—The MAYOR, and *Aldermen* KELLEY, HUTCHINS and LINDSEY.

Fire Department.—*Aldermen* COVENEY, LINDSEY and HUTCHINS.

Health.—*Aldermen* COGSWELL, HOLTON and FRASIER.

Licenses.—*Aldermen* LINDSEY, COGSWELL and STRATTON.

Police.—The MAYOR, and *Aldermen* COGSWELL, BALL and STRATTON.

Roads and Bridges.—*Aldermen* HINCKS, COVENEY and HOLTON.

Sewers.—*Aldermen* KELLEY, HINCKS and FRASIER.

Soldiers' Aid.—*Aldermen* HINCKS, LINDSEY, KELLEY, HUTCHINS and BALL.

Standing Committees of the Common Council.

Bills in the Second Reading.—*Councilmen* WALKER, MCDONNELL and BINGHAM.

Elections and Returns.—*Councilmen* MILLAN, MCPECK and CALLAHAN.

Enrolled Ordinances.— *Councilmen* SANGER, EVELETH and HAYNES.

Members of the City Council,

With the Committees on which they have been appointed.

THE MAYOR.—Claims, Finance, Police.

ALDERMAN BALL.—Accounts, Finance, Bonds, Police, Soldiers' Aid, New Bridge.

ALDERMAN COGSWELL.—Finance, Health, Public Property, Licenses, Police.

ALDERMAN COVENEY.—Finance, Fire Department, Roads and Bridges, New Bridge.

ALDERMAN FRASIER.—Fuel, Printing, Public Property, Health (Standing) Sewers.

ALDERMAN HINCKS.—Lamps, Public Instruction, Roads and Bridges, Sewers, Soldiers' Aid, Legislative Matters.

ALDERMAN HOLTON.—Assessors' Department, Health, Lamps, Public Instruction, Roads and Bridges (Standing.)

ALDERMAN HUTCHINS.—Claims, Ordinances, Water Supply, Bonds, Fire Department (Standing), Soldiers' Aid, New Bridge.

ALDERMAN KELLEY.—Almshouse, City Engineering, Claims, Water Supply, Sewers, Soldiers' Aid, Legislative Matters.

ALDERMAN LINDSEY.—Claims, Fire Department, Fuel, Ordinances, Printing, Licenses, Soldiers' Aid.

ALDERMAN STRATTON.—Accounts, Almshouse, City Engineering, Bonds, Licenses, Police.

THE PRESIDENT OF THE COMMON COUNCIL.—Claims, Finance, Public Instruction.

MR. BINGHAM.—Assessors' Department, Health, Lamps, Bills in the Second Reading, Legislative Matters.

MR. CALLAHAN.—Fuel, Printing, Elections and Returns.

MR. DECOURCY.—Finance, Lamps.

MR. DURRELL.—Claims, Finance, Public Instruction, New Bridge.

MR. EVELETH.—Almshouse, Fire Department, Enrolled Ordinances.

MR. FITZPATRICK.—Assessors' Department, Claims, Public Property, New Bridge.

Mr. HAYNES.—Almshouse, Fire Department, Public Instruction, Enrolled Ordinances.

MR. HOULLAHAN.—City Engineering, Printing, Ordinances.

MR. IVERS.—City Engineering, Finance, Public Property.

MR. MCDONNELL.—Fuel, Water Supply, Bills in the Second Reading, New Bridge.

MR. MCPECK.—Fire Department, Health, Elections and Returns.

MR. MILLAN.—Claims, Printing, Elections and Returns.

MR. SANGER.—Claims, Finance, Ordinances, Enrolled Ordinances, Legislative Matters.

MR. SHANNON.—Health, Ordinances, Water Supply.

MR. SORTWELL.—Finance, Roads and Bridges, Legislative Matters.

MR. TEELE.—Accounts, Lamps, Public Property, Water Supply.

MR. TRACY.—Accounts, Almshouse, Public Instruction, Roads and Bridges, New Bridge.

MR. WALKER.—Accounts, Claims, Bills in the Second Reading, New Bridge.

MR. WAUGH.—City Engineering, Fuel, Roads and Bridges.

Clerk of Committees.

John McDuffie.

Board of Health.

Henry P. Walcott, M. D., *City Physician, ex officio.*

(Term, three years. Appointed 1886.)

(Term, two years.)

Daniel H. Thurston, (appointed 1886.)
William H. Whitney, (appointed 1887.)

Clerk.

John McDuffie.

Health Officer.

Alfred F. Holt, M. D.

Assistant City Physician.

(Elected in April by the Overseers of the Poor, subject to the approval of the Mayor and Aldermen.)

Lewis L. Bryant, M. D.

Health Officers.

Lothrop J. Cloyes.
Thomas H. Lucy.
Mark J. Folsom.
John F. Murray.

Surveyors of Highways.

The same persons who compose the Board of Mayor and Aldermen.

Auditor of Accounts

Harry T. Upham.

Treasurer.

William W. Dallinger.

Assessors.

(Term, three years.)

Joshua G. Gooch (elected 1884).
Joseph Whittemore (elected 1885).
Andrew J. Green (elected 1886).

Assistant Assessors.

Charles H. Hunnewell. George L. Mitchell.
William J. Marvin. John Lennon.
Thomas F. Cahir.

School Committee.

William E. Russell, Mayor, *ex officio*, *Chairman*.

(Term, three years.)

Ward 1.

John L. Hildreth (elected 1884).
Edward H. Hall (elected 1885).
Ephraim Emerton (elected 1886).

Ward 11.

Henry N. Tilton (elected 1884).
Phebe M. Kendall (elected 1885).
James L. Paine (elected 1886).

Ward III.

Freeman Hunt (elected 1884).
Patrick J. Finnegan (elected 1885).
Felix Conlan (elected 1886).

Ward IV.

William H. Orcutt (elected 1884).
Moses D. Church, elected March, 1887, in place of Sarah S. Jacobs, resigned 1885.
Asa P. Morse (elected 1886).

Ward V.

John W. Fairbanks (elected 1884).
Albert M. Barnes (elected 1885).
William A. Start (elected 1886).

Secretary.

W. W. Wellington.

Superintendent of Schools.

Francis Cogswell.

Overseers of the Poor.

The MAYOR, *ex officio*, *Chairman.*

(Term, five years.)

Henry A. Doherty (elected 1886, to fill vacancy caused by the resignation of Knowlton S. Chaffee.)
Charles E. Vaughan (elected 1883).
Sumner Albee (elected 1884).
Michael Corcoran (elected 1885).
Charles Walker (elected 1886).

Secretary.

David P. Muzzey.

Visitor.

Vespasian Danforth.

Warden of the Almshouse.

Martin L. Eldridge.

Physician of the Almshouse.

Lewis L. Bryant, M. D.
(*Assistant City Physician*).

Cambridge Cemetery.

Commissioners.

The MAYOR, *ex officio*, *Chairman*.

(Term, three years.)

Leander Greely (elected 1886 in place of Curtis Davis, 1885, resigned).
Charles E. Raymond (elected 1885).
Silas B. Buck (elected 1886).
David Ellis (elected 1886).
George S. Saunders (elected 1887).
John F. O'Brien (elected 1887).

Superintendent.

James K. Farwell.

Trustees of Cambridge Public Library.

Alderman.

Edward R. Cogswell.

Common Council.

John H. Corcoran.

Citizens at Large.

(Term, five years.)

Jabez A. Sawyer (elected 1883).
Joseph J. Kelley (elected 1884).
Henry H. Gilmore (elected 1885).
Charles Walker (elected 1886).
Samuel L. Montague (elected 1887).

Librarian.

Almira L. Hayward.

Secretary.

Charles Walker.

Cambridge Water Board.

The MAYOR and President of the Common Council, *ex officio*.

(Term, five years.)

Chester W. Kingsley, *President* (elected 1882).
Leander M. Hannum (elected 1885, in place of Henry L. Eustis, 1883, deceased).
John F. O'Brien (elected 1884).
Knowlton S. Chaffee (elected 1885).
James M. W. Hall (elected 1886).

Clerk,

Walter H. Harding.

Superintendent of Water Works.

Hiram Nevons.

Pumping Engineer.

Edwin C. Brooks.

Water Registrar.

Walter H. Harding.

Trustees of Sinking Fund of Water Loan.

The MAYOR, City Treasurer, and President of the Common Council, *ex officio*.

Commissioners on Sinking Funds of the City.

(Term, three years.)

George T. Gale (elected 1884).
Knowlton S. Chaffee (elected 1884).
Joseph A. Holmes (elected 1885).
Solomon S. Sleeper (elected 1886, in place of John M. Tyler, 1885, deceased).
Charles H. Saunders (elected 1886).
Frank A. Allen (elected 1886).

Trustees of the Saunders Temperance Fund.

The MAYOR, and President of the Common Council *ex officio*.

Alderman.	Common Council.
Joseph A. Ball.	Warren Ivers.
	O. H. Durrell.

Trustees of the Bridge Charitable Fund.

The MAYOR, and President of the Common Council, *ex officio*.

Alderman.

Edward W. Hincks.

Trustees of the Dowse Institute.

The MAYOR, and President of the Common Council, *ex officio*.

William W. Wellington. Willard A. Bullard.

Frank A. Allen.

Senators in General Court.

Third Middlesex District, Wards 1, 2, 4, 5.

Alpheus B. Alger.

Third Suffolk District, Ward 3.

Patrick D. Dwyer.

Representatives in General Court.

Solomon S. Sleeper.	John T. Scully.
George A. Perkins.	Charles W. Henderson.
Cornelius G. H. Bennink.	Isaac S. Pear.

Horace G. Kemp.

Registrars of Voters.

The City Clerk, *ex officio*, Clerk of the Board.

Isaac Bradford. Appointed 1887 in place of Jeremiah W. Coveney, resigned.

James H. Wells. (Term expires May 1, 1888).

Horace K. Osborn. (Term expires May 1, 1889.

(One appointed annually, in March or April, to hold office for three years.)

Third District Court of Eastern Middlesex.

Standing Justice.

William H. Orcutt.

Special Justices.

Samuel W. McDaniel Jabez Fox.

Clerk.

Emerson W. Law.

City Solicitor.

Charles J. McIntire

City Engineer.

William S. Barbour.

Commissioner on West Boston, Craigie's and Prison Point Bridges.

William J. Marvin.

Harbor Master.

William J. Marvin.

Superintendent of Streets.

John McSorley.

Superintendent of Public Buildings.

Benjamin H. Steele.

Superintendent of Lamps.

B. Otis Danforth.

Board of Engineers.

Chief Engineer.

Thomas J. Casey.

Assistant Engineers.

First Assistant . . . . . Nathaniel W. Bunker.
Second Assistant . . . . . Charles W. Brackett.
Third Assistant . . . . . William B. Cade.

Secretary of the Board.

Nathaniel W. Bunker.

Police Department.

Chief of Police.

Lothrop J. Cloyes.

Captains of Police.

District I.	District II.	District III.
Thomas H. Lucy.	Mark J. Folsom	John F. Murray.

Inspector.

Sergeant Lawrence J. Ducey.

Sergeants of Police.

James L. Alexander.
William F. Batchelder.
Edward Brady.
Daniel Callahan.
Denis Corcoran.
Lawrence J. Ducey.
Alonzo S. Harriman.
F. B. Pullen.
William Mullett.
Andrew Sproul.

Policemen.

(With the numbers of their Badges.)

No.		No.	
5	Frederick Apel.	50	Thomas F. Dynan.
7	George T. Barrington.	8	Joseph H. Furbush.
28	Edward F. Belcher.	38	Michael A. Ginty.
53	Elbridge S. Blen.	2	William H. Graves.
69	Michael J. Brennan.	41	John J. Griffiths.
10	Benjamin F. Bridden.	9	James P. Hall.
29	Michael J. Conry.	25	Thomas S. Hall.
20	Timothy Corcoran.	14	Benjamin F. Higgins.
66	Francis J. Coghlan.	49	Simon D. Hiscock.
56	John Coulter.	47	Robert T. Hixon.
68	John W. Deehan.	22	Moses W. Hooper.
39	Wm. H. Deehan.	37	Patrick F. Hurley.
40	Patrick Doyle.	33	Amos Jones.
35	George S. Dudley.	11	Henry C. Jones.

No.		No.	
19	Edward Joyce.	48	William H. Ryan.
32	James M. Keaney.	46	Frank W. Scobey.
44	Chas. C. Marston.	6	Leonard Shackford.
27	George A. Marston.	65	John E. Shaughnessy.
30	Jeremiah McCarthy.	63	John W. Skelley.
1	John E. McCrehan.	21	George Smyth.
26	James McElroy.	31	Charles H. Stetson.
64	William H. McMenimen.	24	David A. Stevens.
57	Hugh J. McNamee.	61	Cornelius Sullivan.
43	James E. Murray.	67	Thomas F. Sullivan.
45	Patrick F. Murray.	13	William Twist.
60	William Nickelson.	42	John H. Wells.
18	Charles L. Pike.	23	Michael J. Whalen.
52	Charles W. Priest.	3	Orrin B. White.
59	Thomas J. Real.	54	John Wiley.
70	Frederick A. Robinson.	15	J. F. Wilkinson.
62	Bernard J. Roper.	34	James W. Wright.

Policemen (without pay.)

J. L. P. Ackers.
Horace A. Allyn.
Mark H. Appleby.
John A. Bartlett.
Richard Balmer.
William H. Bates.
Joseph Beaubo.
Charles F. Bowman.
Charles W. Brackett.
Ferdinand N. Buffum.
Daniel A. Buckley.
Nathaniel W. Bunker.
Thomas J. Burns.
William Burgess.
Samuel Busnach.
William B. Cade.
Thomas J. Casey.
Moses M. Child.
Charles S. Childs.
Ambrose H. Clark.
Noah M. Cofran.
John Collier.
Joseph Collins.
William Collins.
Patrick Corcoran.
Carl A. Corlin.
Vespasian Danforth.
George C. Dilman.
James Doherty.
George W. Durgin.
Patrick F. Dunlea.
George D. Eaton, Jr.
Martin L. Eldridge.
James K. Farwell.
Dennis J. Fielding,
John E. Fitzgerald.
Martin Flaherty.
Thomas Flynn.

Oliver G. Fosdick.
William Foster.
Antonio Francis.
Charles A. Gay.
William T. Gibson.
Eli L. Goodrow.
George W. Greenleaf.
Charles E. Hadcock.
Henry L. Hale.
Luther Hapgood.
John L. Harrington.
George H. Hastings.
Thomas M. Howard.
Plumer S. Howe.
William Hunnewell.
Samuel F. Hunt.
James W. Irwin.
T. W. Jennings.
A. B. Joy.
Conrad D. Kinnear.
Barney King.
Martin V. Langley.
Charles S. Lincoln.
John Little.
Adam G. Loner.
Abiel E. Long.
James W. Lovering.
Charles K. Luther.
Francis M. Mason.
Bernard McCaffrey.
Bernard McElearney.
James McNeill.
Thomas Montgomery.
Dennis Murphy.
Nathaniel M. Neale.
Augustus W. Nelson.
Hiram Nevons.
Thomas F. O'Brien.
Francis A. Osborn.
Thomas W. Penney.
Joseph A. Pike.
Frederick E. Pond.
Linn B. Porter.
Francis L. Pratt.
P. H. Raymond.
John Riley.
Robert Rogers.
Charles L. Russell.
Joshua S. Sanborn.
Alex. F. Shepherd.
Oscar W. Short.
Joseph Skelton.
Andrew G. Smith.
Henry Smith.
Dennis P. Sullivan.
James W. Thompson.
George W. White.
George Wood.

Keeper of Lock-ups.

Lothrop J. Cloyes.

Truant-Officers.

Moses M. Child.
John Collier.
Francis M. Mason.

Probation Officer.

Frederick W. Hagar.

Constables.

George T. Barrington.
William F. Batchelder.
John L. Boynton.
John C. Burdakin.
Michael S. Busnach.
Lothrop J. Cloyes.
Lawrence J. Ducey.
Benjamin W. Ellis.
John R. Fairbairn.
Thomas T. Ferguson.
Mark J. Folsom.
Joseph Fox.
John Good.
Alonzo S. Harriman.
Alfred F. Holt.
Appleton Hubbard.
Charles H. Hunnewell.
James M. Keaney.
John Lennon.
Charles S. Lincoln.
Thomas H. Lucy.
Frank H. Lull.
Frederick A. Lull.
James I. Murphy.
John F. Murray.
Dennis B. Nash.
John W. Skelley.
Warren F. Spaulding.

Undertakers.

William Casey.
John W. Coveney.
Thomas Devens.
David Fudge.
Samuel F. Hunt.
Arthur C. Hanscom.
Joseph J. Kelley.
Gustavus King.
Horace D. Litchfield.
Judson Litchfield.
Roland Litchfield.
Frank H. McDonald.
C. Henry Lockhart.
Abiel E. Long.
Edward J. P. Maccabee.
William Ross.
James E. Rourke.
William A. Taylor.
Benjamin F. Wyeth.
George F. Ricker.
John J. Ross.
John Sweeney.
Dennis D. Sullivan.

Auctioneers.

John K. Abbott.
Fred N. Brown.
Daniel A. Buckley.
Edward Burnham.
N. J. Campbell.
Jeremiah W. Coveney.
John W. Coveney.
M. E. Cushman.
Watson G. Cutter.
John R. Fairbairn.
Stephen H. Harrington.
John Lennon.
P. Allen Lindsey.
Frederick A. Lull.
John Mahady.
Edmund E. Sanborn.
Herbert Walker.

Fence-Viewers.

George B. Lothrop. Abel Stevens.
Francis H. Stickney.

Field-Drivers.

James S. Alexander.
Frederick Apel.
George T. Barrington.
Edward F. Belcher.
Elbridge S. Blen.
Edward Brady.
Benjamin F. Bridden.
Daniel Callahan.
Michael J. Conry.
Dennis Corcoran.
Timothy Corcoran.
John Coulter.
Patrick Doyle.
George S. Dudley.
Thomas F. Dynan.
John W. Deehan.
Wm. H. Deehan.
Joseph H. Furbush.
Alonzo S. Harriman.
Benjamin F. Higgins.
Simon D. Hiscock.
Robert T. Hixon.
Moses W. Hooper.
Patrick J. Hurley.
Amos Jones.
Henry C. Jones.
James M. Keaney.
George A. Marston.
Jeremiah McCarthy.
James McElroy.
William H. McMenimen.
Hugh J. McNamee.
James E. Murray.
William Nickelson.
Charles L. Pike.
Charles W. Priest.
Bernard J. Roper.
Wm. H. Ryan.
Frank W. Scobey.
Leonard Shackford.
John E. Shaughnessy.
John W. Skelley.
George Smyth.
David A. Stevens.
Thomas F. Sullivan.
William Twist.
John H. Wells.
Orrin B. White.
John Wiley.
James F. Wilkinson.
James W. Wright.

Measurers of Wood and Bark.

William H. Hood.
William Jaques.
Herbert T. Lawrence.
Horace L. Porter.
Joshua S. Sanborn.

Pound-Keepers.

Benjamin F. Bridden. William Twist.

Fish-Officers.

William A. Bancroft. Horace G. Kemp.
George A. Thurston, Jr.

Hay-Weighers.

Thomas Gurnham. Joshua S. Sanborn.
Timothy Sullivan.

Coal-Weighers.

Frank Bailey.
Edward W. Blake.
Silas E. Buck.
Edward E. Coye.
George C. Gardiner.
Walter F. Grieves.
Fred. A. Humiston.
Patrick Kelley.
Herbert T. Lawrence.
Thomas H. Matthews.
George L. Mitchell.
John E. A. Mulliken.
Horace L. Porter.
Joshua S. Sanborn.
Jones Valentine.
Alfred H. Wellington.
Ernest H. Wellington.

Weigher of Boilers and Heavy Machinery.

Joshua S. Sanborn.

Inspectors of Junk Shops.

Mark J. Folsom. Thomas H. Lucy.
John F. Murray.

Sealer of Weights and Measures.

B. Otis Danforth.

Deputy Sealer.

Conrad D. Kinnear.

Weighers.

Joseph W. Averill.
Leonard R. Bacon.
George W. Barnes.
Thomas Burns.
Isaac A. Chandler.
James W. Coleman.
Ira Doughty.
John Guiney.
Alvin M. Haines.
Charles F. Hittinger.
Nathan H. Holbrook.
Henry Hooker.
Henry James.
Alfred Morrill.
Robert S. Paine.
James H. Reardon.
John Reardon, Jr.
Joshua S. Sanborn.
Thomas H. Shea.
Charles F. Stafford.
George W. Wright.

Inspector of Milk.

Frank A. Dunbar.

Inspector of Vinegar.

Frank A. Dunbar.

Surveyors of Mechanics' Work.

William S. Barbour.
Arthur Hodges.
Charles A. Mason.
John S. Pollard.

Measurers and Surveyors.

Henry L. Hale.
E. F. Young.

Inspector of Charcoal Baskets.

B. Otis Danforth.

Measurer of Grain.

B. Otis Danforth.

TABLE OF CONTENTS.

	Page.
MAYOR'S ADDRESS	3
REPORT OF AUDITOR OF ACCOUNTS	34
Receipts during the Year	34
Expenditures	34
Temporary Loan	35
City Debt	35
Funded Debt	36
Water Loan	37
Receipts credited to Several Accounts	39
Expenditures charged to Several Accounts	40
DETAILED STATEMENT OF RECEIPTS, EXPENDITURES, AND APPROPRIATIONS	42
Abatements and Discounts	42
Bridges	42
Bridges (West Boston, Craigie's and Prison Point)	43
Cambridge Public Library	44
Cemetery	45
Cemetery Extension	46
Cemetery Fund	46
City Lands	47
City Building (care and repairs)	47
Discount Taxes	49
Engineering	49
Fire Department	50
Health Department	51
Incidental Expenses	52
Interest	56
Interest on Water Loan	57
Lighting Streets	57
Loan, Temporary	59
Loan, City	58
Loan, Low Land	58
Loan, Street Widening	58
Loan, Sewer	59
Loan, Water	59
Pauper Department	59
Pauper Department (Almshouse)	60
Pauper Department (House Offal)	63

PAGE.

RECEIPTS, EXPENDITURES, AND APPROPRIATIONS—*Continued.*

POLICE DEPARTMENT 64
SALARIES 66
SCHOOL DEPARTMENT (DRAWING SCHOOLS) 67
SCHOOL DEPARTMENT (EVENING SCHOOLS) 67
SCHOOL DEPARTMENT (INCIDENTAL EXPENSES) 68
SCHOOL DEPARTMENT (SALARIES) 68
SCHOOL DEPARTMENT (TEXT-BOOKS AND SUPPLIES) . . 69
SCHOOL HOUSES (CARE AND REPAIRS) 69
SCHOOL-HOUSES (NEW AND FURNITURE) HIGH SCHOOL . 71
SCHOOL HOUSES (NEW, AND FURNITURE) WEBSTER SCHOOL 72
SCHOOL HOUSES (NEW AND FURNITURE) IN WARD II . . 72
SCHOOL HOUSES (NEW AND FURNITURE) WYMAN SCHOOL 73
SEWERS (CONSTRUCTION) 74
SEWERS, CONSTRUCTION (BELMONT) 75
SEWERS (MAINTENANCE) 75
SHADE TREES AND PUBLIC GROUNDS 77
SINKING FUNDS 77
SINKING FUND OF WATER WORKS 78
STATE AID 78
STATIONERY AND PRINTING 79
STREET DEPARTMENT (PAVING) 79
STREET DEPARTMENT (REPAIRS) 80
STREET DEPARTMENT (WATERING) 82
STREET DEPARTMENT (WIDENING AND EXTENSION) . . 83
SURRENDERED ESTATES (SALE ACCOUNT) 83
TAX (CORPORATION) 83
TAX (NATIONAL BANK) 83
TAX LIEN ACCOUNT 84
TAX (COUNTY) 84
TAX (STATE) 84
TAXES, 1880 84
TAXES, 1881 84
TAXES, 1882 84
TAXES, 1883 84
TAXES, 1884 85
TAXES, 1885 85
TAXES, 1886 85
WATER WORKS (CONSTRUCTION) 85
WATER WORKS (CONSTRUCTION FRESH POND LAND) . . 86
WATER WORKS (CONSTRUCTION, STONY BROOK) 87
WATER WORKS (MAINTENANCE) 88
WATER WORKS (RATES, FINES, ETC.) 90
WATER WORKS (SUPPLIES) 91

TAXES OF 1886 92
VALUATIONS, POLLS, DWELLINGS AND RATE OF TAXATION, 1878–1886 93
ABATEMENTS AND DISCOUNTS, 1878–1886 94

PAGE.

LIQUOR LICENSES, 1878–1886 94
INTEREST ON TEMPORARY LOAN, 1878–1886 95
REPORT OF COMMITTEE ON FINANCE 96
POLLS AND VALUATIONS 105
REPORT OF THE CITY TREASURER 111
REPORT OF COMMISSIONERS OF SINKING FUND OF THE CITY 114
REPORT OF TRUSTEES OF SINKING FUND OF CAMBRIDGE WATER WORKS 118
REPORT OF TRUSTEES OF DOWSE INSTITUTE . . . 122
REPORT OF TRUSTEES OF BRIDGE CHARITABLE FUND 123
REPORT OF TRUSTEES OF SANDERS TEMPERANCE FUND 125
REPORT OF SANDERS TEMPERANCE FUND MISSIONARY 126
REPORT OF OVERSEERS OF THE POOR 128
Expenditures and Receipts at Almshouse 129
REPORT OF CITY CLERK (Fees) 133
REPORT OF CITY TREASURER (Fees) 134
REPORT OF TRUSTEES OF THE CAMBRIDGE PUBLIC LIBRARY 135
REPORT OF THE LIBRARIAN 138
REPORT OF COMMITTEE ON PUBLIC PROPERTY . . . 142
REPORT OF THE SUPERINTENDENT OF PUBLIC BUILDINGS 167
REPORT OF THE INSPECTOR OF BUILDINGS 173
REPORT OF THE COMMITTEE ON SOLDIERS' AID . . . 176
REPORT OF COMMISSIONERS OF THE CEMETERY . . 177
REPORT OF CITY ENGINEER 180
Streets 181
Bridges 182
Sewers 183
Water Works 187
Cemetery 189
Building Ordinance 189
Work of the Office 189
REPORT OF SUPERINTENDENT OF STREETS 191
REPORT OF BRIDGE COMMISSIONER 197
REPORT OF HARBOR-MASTER 201
REPORT OF WATER BOARD 205
Water Supply 208
REPORT OF THE REGISTRAR 218
REPORT ON ACCOUNTS OF WATER BOARD 223
REPORT OF SUPERINTENDENT OF WATER WORKS . 227
REPORT OF THE ENGINEER OF THE WATER WORKS 243
REPORT OF CHIEF ENGINEER OF THE FIRE DEPARTMENT 247
REPORT OF CHIEF OF POLICE 276
REPORT OF PROBATION OFFICER 283
REPORT OF BOARD OF HEALTH 286

REPORT OF SUPERINTENDENT OF LAMPS 301
REPORT OF MILK AND VINEGAR INSPECTOR 309
REPORT OF SCHOOL COMMITTEE 313
Tabular View of Schools 340
REPORT OF SUPERINTENDENT OF SCHOOLS—
Summary of Statistics 346

APPENDIX.

Page.
ORDINANCES 359
City Physician 359
Fresh Pond 359
Inspector of Vinegar 359
Clerical Assistance 360
Public Library 360
Sinking Funds 361
Shade Trees and Public Grounds 361
Assistant City Clerk 361
Water Works 362
Streets 362
Sewers 363
Fire Department 363
Chief Engineer 364
Clerk of Engineers 364
Water Works 364
Superintendent of Lamps 364
Streets 365
Wards 365
Third District Court 365
Sewers 366
City Physician 366
Pay of Laborers 367
Salaries 367
Fire Department 368
City Messenger 368
Water Works 368
Bond of Auditor 369
Uniform of Fire Department 369
Pay of Police Force 369
City Physician 370
Pay of Laborers 370
Assistant Assessors 370
Water Works 371
Inspector of Milk 371
Pay of Laborers 371
Water Works 372
Salary of Mayor 372
Salary of City Engineer 372
Salary of Superitendent of Lamps 372
Water Works 372
Water Works 373

PAGE.

ORDINANCES—*Continued.*
WATER WORKS 373
SALARY OF ASSESSORS 373
STREETS 373
PAY ROLLS 373
SALARY OF ASSISTANT CITY PHYSICIAN 374
SALARY OF CHIEF ENGINEER 374
SALARY OF CLERK OF COMMON COUNCIL 374
PAY-ROLLS 374
CONTRACTS AND EXPENDITURES 375
PLANK WALKS 375
WATER WORKS 376
CEMETERY 377
STREETS 377
COMMITTEE ON FINANCE 377
PAY-ROLLS 377
PAY-ROLLS 380
CONTRACTS AND EXPENDITURES 380
SALARY OF HARBOR MASTER 380
WARD BOUNDARIES AND APPORTIONMENT OF MEMBERS OF COMMON COUNCIL 380
SEWERS 381
CITY SCALES AND WEIGHERS 381
PAY OF CALL MEN IN FIRE DEPARTMENT 382
LOANS 382
WEEKLY PAYMENTS 383
SALARIES OF ASSISTANT ENGINEERS OF FIRE DEPARTMENT 386
STREETS 386
WEEKLY PAYMENTS 387
FEES OF CITY OFFICERS 387
EMPLOYMENT OF LABORERS 388
BUILDING 389
MAYORS, 1846-1887 409
MUNICIPAL REGISTER 410

7929 111
167